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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JANUARY 1874.

ART. I.—*On the Difficulties attending the Diagnosis of Aneurism, being a Contribution to Surgical Diagnosis and to Medical Jurisprudence.* By STEPHEN SMITH, M.D., Surgeon to Bellevue Hospital, New York.

III. ANEURISM AND MALIGNANT GROWTHS.—Errors in the diagnosis of aneurism from malignant growths have occurred under a variety of circumstances. An aneurism may assume so many of the characteristic symptoms of encephaloid disease as to render accurate diagnosis extremely difficult or even impossible. And, on the contrary, encephaloid tumours may be so located in relation to large arteries, and so respond to the ordinary tests of aneurism, as to deceive the most careful and experienced surgeon.

1. *Aneurism mistaken for Malignant Growth.*—An aneurism may gradually enlarge and become so far consolidated as to cease pulsation, and have a feeling of hardness at some points, and softness and fluctuation at others. Under such circumstances, if the early history of the tumour is wanting, or too obscure to be considered reliable, the diagnosis must inevitably be in favour of malignant disease. No amount of manipulation, and no application of tests, could give other than negative evidence. If, however, the fact can be ascertained, that in its early history pulsation and a bruit were present, the nature of the affection would be more apparent. In such cases, therefore, the early history is of the greatest importance to a correct diagnosis.

The following case came under my observation:—

M. S., æt. 30, entered Bellevue Hospital for a large tumour filling the right popliteal region. She was in feeble health, and her mind was so affected that it was extremely difficult to obtain any history of her case, and that which she gave was so imperfect that it was rejected as unreliable. The diagnosis rested upon the examination of the tumour. This was so large that it distended the region of the ham, and caused a fulness of the anterior part of the knee. At

some points it was quite soft and fluctuating, and at others there was the hardness of fibrous tissue—neither pulsation nor a bruit was discoverable. It was evidently rapidly increasing, but no reliable history of its progress could be obtained. The case was very cautiously and thoroughly examined by all the surgeons and consulting surgeons of the hospital, including Drs. Mott and Stevens, and with a single exception, the conclusion was that the disease was malignant, and amputation was accordingly advised. The surgeon who diagnosed aneurism had elicited from the patient, after the most persistent inquiry, slight but yet satisfactory evidence that when the tumour first appeared there was pulsation. Amputation was performed, and on dissecting the tumour an immense aneurism was discovered, partially consolidated.

It rarely happens that any case is made the subject of more exact and prolonged study than this; every effort was made by the most skilful diagnosticians to determine the true nature of the case; the history was carefully obtained, auscultation was repeatedly practised, and finally exploration was resorted to; and yet, in a consultation of nearly a score of surgeons, there was but one dissenting voice from the conclusion reached. And that dissent was based upon an obscure feature of the early history of the case which might well have been overlooked.

A very instructive case was reported by Mr. Paget (*Brit. Med. Journ.*, 1858, p. 724). The case was one of aneurism of the external iliac artery which remained in doubt until the question was settled by the autopsy. At first there was a difference of opinion as to whether it was aneurism or malignant disease, the former view so far predominating as to lead to an attempt to ligate the common iliac. The operator, however, came to the conclusion while operating that the tumour was malignant, and abandoned the operation. The autopsy revealed the existence of an aneurism of the external iliac and femoral arteries. This case deserves being quoted at length "as showing the great extent of unseen disease which is often concealed behind iliac and femoral aneurisms rendering the arteries inaccessible, and also showing how far the ordinary symptoms of aneurism may be modified by changes in the sac making the diagnosis impossible even at the operation."

J. R., æt. 38, admitted into St. Bartholomew's Hospital April 16th, 1858; temperate habits, and had enjoyed good health. In his right groin was a large elastic and pulsating swelling crossed and impressed by the crural arch, reaching as low as the saphenous opening, through which it protruded, and became subcutaneous, a portion being felt beneath the tensor vaginæ femoris. Above the crural arch the swelling could be felt for two inches and a half upwards and backwards, and here it appeared to end. Externally it could be traced nearly up to the anterior superior spine of the ilium, and in the opposite direction as far as the external abdominal ring. The pulsation was strong and forcible in all directions, synchronous with the pulse, and accompanied by a loud rough bruit. Pulsation of the arteries below unaffected. The patient complained of pain in the swelling, though the movements of the limb were little impaired, cellular tissue œdematous; skin quite congested. Pulse 90, strong, and no cardiac murmur.

The swelling had existed three years without increasing in size, and was attributed to straining in lifting heavy weights. Patient retained his occupation, and a fortnight before admission walked seventeen miles to "walk down" the swelling, and this without inconvenience, though the œdema rapidly increased after the effort.

This case was for a long time a problem to the gentlemen in attendance at the hospital. The appearances of aneurism in the tumour which projected through the saphenous opening were pretty plainly marked; the pulsation was of the aneurismal character and accompanied by a bruit; while, on the other hand, the frequency of pulsating malignant tumours in this situation, the absence of alteration in the pulse lower down the limb, and something in the aspect of the patient caused a suspicion in the minds of many that the disease was of cancerous nature, and unconnected with the vessels except by position. On the 19th of April Mr. Paget operated for ligature of the external or common iliac arteries, as circumstances might decide. On dividing the fascia transversalis and passing the finger into the iliac fossa, this cavity was found filled with a firm smooth convex swelling, which was behind the tumour felt in the groin, and too deep in the fossa to be felt from the front. It extended inwards beneath the iliacus muscle and fascia to the psoas, and below it was continuous with the pulsating mass felt above the crural arch; above it extended to within an inch of the kidney; did not pulsate, but was firm and apparently solid. As neither the external nor common iliac arteries could be reached, and as there was apparently a solid tumour occupying the iliac fossa, the suspicion of the cancerous nature of the tumour was confirmed and the operation abandoned. The patient was put to bed, soon recovering from the immediate consequences of the operation, but finally died, ten weeks after, of secondary hemorrhage.

On *post-mortem* examination a large diffuse aneurism of the external iliac and common femoral arteries was found, the swelling filling the lower half of the abdomen and greater part of the pelvis on the right side. The bladder was pushed to the left of the median line, and the cæcum lifted to the umbilicus. The right common and external iliac artery as it ran over the median surface of the swelling was compressed, but pervious; the coats healthy to within two inches of the crural arch, beyond which point its walls were thickened and rigid with calcareous deposits. In the posterior wall of the vessel there was an opening which led into the cavity of an aneurism. Its edges were regular and smooth, and it was covered with a firm clot. The lining membrane of the vessel was not to be traced for more than an inch beyond the mouth of the aneurism, the sac being formed of the neighbouring tissues condensed and compressed. The psoas passed through the centre of the swelling; it was softened, disintegrated, and separated from its connections. The iliacus had disappeared. The swelling itself consisted of blood clots in various stages of organization, without the concentric arrangement of a well-formed aneurismal clot.

We have in this case an example of a fully developed aneurism which did not perceptibly affect the distal pulsation of the arteries of the limb. This fact evidently proved one element in the diagnosis erroneous. In other instances we have seen the same absence of change in the pulsation of the arteries beyond the growth, and when it was discovered that no aneurism was present, great importance was at once attached to this symptom. It is apparent, however, that the character of the pulsation beyond the tumour has a qualified importance. Though this pulsation is generally diminished in aneurism, it is not invariably; and though the pulsation in the arteries is generally unaffected by the proximity of a tumour, yet such tumour may so far compress the artery as to very materially diminish the strength of the distal pulse.

This case derives much importance from the eminence of the surgeons engaged in its treatment, and the care with which it must have been studied.

A case of femoral aneurism mistaken for malignant disease was recently

reported by Mr. Gloag. (See *Am. Journ. Med. Sci.* for July last, p. 261; from *Brit. Med. Journ.* May 24, 1873). The symptoms of aneurism were all absent, while some of the more prominent features of malignant growths were present. This case has been so recently recorded in this Journal that we need not quote here the details, but we would especially call attention to the judicious remarks of the reporter.

2. *Malignant Growth mistaken for Aneurism.*—The accurate diagnosis of malignant growths from aneurisms, especially when located in the groin or pelvis, is frequently quite impossible. In these cases we may have a tumour forming in the course of an artery, with pulsation and bruit from the first, both of which cease on compression of the artery on the proximal side; exploration yields blood of an arterial character and perhaps with a jet. By no method of reasoning and by no scientific test, except perhaps the removal of some of the substance of the tumour and its examination by the microscope, can the question be definitely settled. The surgeon may suspect malignant disease from the enlargement of the glands, or the appearance of cachexia, but he is quite likely to be deceived in regard to both symptoms, and finally be compelled to act on the most favourable theory of the case.

In the following case, reported by Mr. Moore (*Med.-Chir. Trans.*, vol. xxxv.), we have an instructive example of this class of cases, and of the difficulties which the surgeon may have to encounter.

A man æt. 53 had great œdema of the left lower extremity, and pain in the groin and knee; limb as large again as its fellow; cutaneous vessels congested; œdema reached the crest of the ilium; abdominal walls pitted slightly on pressure for some inches above the groin; this region was swollen, and its folds were almost obliterated by a large pulsating tumour, a small portion only of which could be felt below Poupart's ligament; but it extended upwards toward the umbilicus beyond the horizontal level of the anterior superior spine of the ilium; occupied the situation of the external iliac artery and projected about equally on either side of that vessel; inward reached nearly to the median line, and outward far into the iliac fossa; its whole breadth being apparently about six inches. It was not movable; the greater part of its surface smooth and firm; was lobulated at four or five points, and the prominent parts were soft; tumour pulsated at every beat of the heart; impulse distinct and stronger when the femoral artery was compressed; but the pulsation though strong was less than is generally felt when a large aneurism full of fluid blood communicates freely with a large artery. It also varied at different parts of the tumour, being greater outside than within, at the soft prominences than at the level and firmer parts; the beat was weak on either side of the external iliac artery, which was consequently readily distinguished to be raised and stretched over the front of the tumour. A rough, loud murmur could be heard over the whole tumour; all the arteries beat hard and round, but, in the tibial vessels, the pulse was weaker on the left than on the right side; glands in the groin distinct but not enlarged, and a small hard lump could be felt above Poupart's ligament on the right side, and superficial to the external iliac artery.

The patient's account of his disease varied continually, but the most credible one seemed to be that it had begun three months before with swelling of both knees, which subsided in the right, while that of the left extended to the whole limb. Pain of a gnawing character was felt at the knee extending to the ankle, and followed by a stiffness and slight aching in the groin. Three weeks before admission he noticed a slight beating in the groin, and has lately suffered severe

pain in that part. About a month ago he used to pass an unusual quantity of water; the bowels were costive.

The first impression as to the nature of the disease was, that it was an enlargement, possibly of malignant character, of the iliac glands, and was treated accordingly for eight days following his admission; but the tumour increased in size, and its pulsation became stronger, and accompanied with great pain which prevented him from sleeping. The case was now thought to be one of aneurism, and the common iliac was ligatured; the patient died forty-three hours after the operation.

On examination a large tumour was found in the bifurcation of the common iliac artery. The external iliac arched over the tumour, and was tightly stretched and flattened; the internal iliac beat against its posterior part, and the obturator ran beneath it, so that the tumour was almost encircled in artery, and through its substance ran the large gluteal, sciatic, and internal pudic arteries. About half an inch below the right external iliac artery there was a mass of enlarged glands affected with encephaloid cancer. On examining the urine found in the bladder after death, it was found to contain an abundance of cancer cells. No examination of the urine with the microscope was made during life.

In this case the history given by the patient was entirely unreliable, a fact often noticed in doubtful cases. Another and more interesting feature of this case was the presence of cancer cells in the urine. This discovery was not made until the autopsy. Had this evidence of the existence of malignant disease in the system been discovered before death, it would have doubtless been regarded as decisive evidence of the malignant character of this tumour. And yet the absence of cancer cells in the urine would not be proof positive that the tumour was not malignant. It is noticeable in this case that the distal pulse of the affected limb was diminished.

Malignant growths in the region of the axilla and shoulder sometimes so closely simulate aneurisms as to render the diagnosis extremely difficult if not impossible. All the most reliable tests of aneurism may be affirmative, while the symptoms of malignant disease are doubtful or negative. In the following case, reported by Dr. Nicol (*Ed. Med. and Surg. Journ.*, vol. 72), the attention of the consulting surgeons was especially called to the liability to error in their diagnosis, by an eminent surgeon, and the examination was carefully repeated. After reviewing the symptoms of the case and submitting the growth to a thorough re-examination with the stethoscope, the conclusion was unanimous against malignant disease and in favour of aneurism.

Mr. T., æt. 68, a farmer, fourteen months ago, while suffering from rheumatism in the left shoulder-joint, fell upon the edge of the hatchway; was stunned; felt the rheumatic pain much aggravated; during the night sustained another heavy fall. The shoulder-joint and contiguous parts were very painful, and though the pain gradually subsided and he returned to his avocation with the arm in a sling, yet it was powerless from the shoulder to the elbow; day after accident he was seen by several surgeons, who declared there was neither fracture nor luxation; pain continued and swelling increased. Three months ago, observed pulsation in the tumour, which had attained considerable magnitude, and within the past three weeks its growth has been more rapid and the pain more aggravated; measures 8 inches in its vertical diameter, and 10½ transversely; uniform on its surface, but more prominent over the axilla; portion occupying the axillary cavity being a trifle compared with that on the forepart

of the shoulder. A large vein traverses its surface; no discoloration of parts; is elastic and firm; compression does not diminish its bulk much; arm admits of free motion, but is very painful; embraced by the hand there is strong pulsation and distinct feeling of distension, the hand being visibly elevated, and this sensation and appearance is more marked at its most prominent part over and in the axilla; humeral artery can be felt high up; but in the axilla the pulsation is lost, as in the tumour, and close to it it is sawing and peculiar, but at the wrist differs but little from that of the others; diagnosis of consultants, aneurism of the axillary, or of one of the humeral vessels.

I communicated a history of the case to Prof. Syme, of Edinburgh; that gentleman expressed considerable doubt as to the tumour being aneurismal, and suggested that it might proceed from a vascular medullary growth from the bone. A week after, a second careful examination was made, when Mr. Syme's views were submitted to the consultation; the tumour had sensibly increased; no discoloration of parts; superficial veins had disappeared; notwithstanding the justly entitled deference extended to the doubts of Prof. Syme, none were entertained by the surgeons regarding the aneurismal character of the tumour. On the thirteenth day it was not sensibly increased, though the forearm had become œdematous and on stethoscopic examination the bellows sound was not as distinct as has been described by many writers; proceeded to ligate the subclavian artery above the clavicle; three hours after the tumour was free from pain; more flaccid; not much diminished in bulk; felt somewhat lobular; three weeks after the operation the patient was doing finely; the tumour had sensibly diminished; there was no discoloration; on the evening of that day a severe hemorrhage took place; he died three days after the occurrence of the bleeding. At the autopsy it was found that the humerus was detached about three inches from its head, which was supposed to be due to partial absorption; the artery was *perfectly sound alongside and past* the tumour, to which it was firmly adherent, together with the accompanying vessels and nerves. The muscles were also firmly adherent to the tumour, which was found to be encysted; much diminished in size, and the axillary projection described was caused by its being strapped down by the long head of the biceps; on section it was found to present all the characters of medullary sarcoma. Not a particle of matter was found, and the bone in its whole diameter for three inches downwards had disappeared, a thin shell of the head corresponding with its articulating surface only remained. On disarticulation its surface was sound, as also the scapular cavity, the ligamentous structures being much thickened.

Malignant growths in the region of the neck and lying in the course of the arteries are liable to be mistaken for aneurism, especially when of the encephaloid variety. In these cases the tumours are much more accessible than when located in the pelvic region, and their examination may be more thorough and satisfactory. Difficulties are more liable to be encountered when the growth is in the lower or upper portion of the neck and partially concealed by the upper border of the thorax or by the inferior maxilla. In the following case (*Lancet*, vol. i., 1844) the tumour was situated in the upper part of the neck, and extended deeply under the lower jaw:—

J. M., æt. 44, labourer; unhealthy appearance; had an oval tumour on the right side of the neck, in the post-superior triangle, penetrating deeply so as to push the right tonsil forwards; commenced two years ago; has continued to increase in size without causing him any annoyance; pulsation in the tumour is distinct, and ceases when pressure is made below it on the carotid, though pressure on this artery does not diminish the size of the swelling; has a boggy inelastic feel; no discoloration of the skin covering it; diagnosis, aneurism of the external carotid; the common carotid was ligated. Twenty-four days after the operation the patient died, and on examination the carotid artery was perfectly sound, except at the place where the ligature had been applied, and the

tumour was found to be carcinomatous, part of which was lodged in the angle formed by the division of the common carotid.

IV. ANEURISM AND PULSATING TUMOUR OF BONE.—The first reported case of pulsating tumour of bone (by John Pearson, of London (*Med. Com.*, vol. i.), in a paper read January 23, 1786) was mistaken for an aneurism of the anterior tibial artery. On the dissection of the limb, after amputation, he discovered that the arteries were sound, but that "the whole internal substance of the head of the tibia was destroyed, forming an excavation capable of containing more than half a pint of fluid." About the same time Scarpa (*Reflections et Observations sur l'Aneurisme*) had a very similar case under observation, which he diagnosticated as rupture of the anterior tibial artery. Amputation was performed, and, on dissection, he found the arteries all in the most perfect state of integrity, but extensive destruction of the head of the tibia was present.

Since the date of Pearson's and Scarpa's publications, a large number of cases have been reported, a considerable percentage of which was mistaken for aneurism. These tumours may be classified as follows: 1. Those receiving an impulse from an adjacent artery; 2. Those of a cancerous nature; and 3. Osteo-aneurism. In each variety the difficulties attending the diagnosis may be very great and, in some cases, insuperable. The symptoms of aneurism may present themselves with varying intensity and exactness, and confound the most sagacious practitioner. It is only when the expanded bone is detected that the surgeon is fully assured of the nature of the affection.

Of the many reported cases of error in the diagnosis of pulsating tumour of bone from aneurism, the following, by Mr. Stanley (*Med.-Chir. Trans.*, vol. xxviii.), fairly illustrates the difficulties which may be met with:—

Patient, a man of temperate habits, 42 years of age; pulse varied from 96 to 100, and the finger placed on any of the large arteries received the sensation of the vessels being preternaturally large, the beats being accompanied by a powerful vibration; a distinct bruit was perceptible, with the stethoscope, over the brachial and femoral arteries. The pulsation of the left ventricle of the heart was loud, but there was no bruit. About the middle and inner side of the arm there was a tumour, loosely connected with the surrounding textures, the size of a small orange, painless and devoid of pulsation; had noticed it ten years ago, and had been stationary for the past three years. On the left side of the pelvis was a tumour, connected with the ilium, projecting from both its surfaces, but more so from the abdominal surface. It extended from the abdominal surface of the ilium, downwards, to Poupart's ligament, and into the cavity of the abdomen towards the median line. The tumour was moderately firm, and did not recede when compressed. Everywhere within reach of the fingers the tumour pulsated with the deep heavy beat of aneurism; the pulsation was less forcible on the portion projecting from the dorsum of the ilium. A bellows sound was plainly perceived on auscultating the tumour. The external iliac could be traced by its pulsations along the inner side of the tumour. Compression of the femoral artery below the tumour increased its size and tension, and its pulsation stopped on compressing the lower part of the aorta. A small artery was felt in the lower and outer part of the tumour, and the skin covering it presented a slight blush. A consultation was held, and the preponderance of opinion was in favour of aneurism. Ligature of the

common iliac was performed; after the ligature of the iliac artery had stopped completely the pulsation of the tumour, an artery the size of a crow's quill was discovered pulsating forcibly on its upper surface within the abdomen. Three days after the operation the man died from peritonitis, and, on examining the tumour, it was found that a portion of it had displaced the external iliac artery from the walls of the pelvis, but this artery had no immediate connection with the tumour. The substance of the tumour was composed of a spongy tissue with cells and vessels distributed through it.

The feature of this case which most clearly distinguished its true character was the projection of the tumour from both surfaces of the ilium. An aneurism of one of the iliac arteries could scarcely have produced such destruction of this bone as to have penetrated to its external surface.

Dr. C. D. Smith, of New York (*N. Y. Journ. Med.*, March, 1853), reported a case of pulsating tumour of bone, which was mistaken for aneurism of the posterior tibial artery. A ligature was applied first to the posterior, then to the anterior tibial artery, subsequently to the femoral, and finally amputation was performed. There was no bruit at any time. In this case Dr. Mott was in consultation.

V. ANEURISM AND ENLARGED THYROID BODY.—In the enlargement of a lobe of the thyroid body the tumour may apply itself very accurately to the region immediately over the carotid artery. In this case the tumour receives the pulsations of the artery, it may also emit a bruit when pressed by the ear upon the artery, and it may be so low in the neck as to prevent compression of the artery on the proximal side.

The scientific test of most value, when the tumour (bronchocele) is small and movable, is its movement with the larynx. This is a positive sign that the growth is connected with the larynx, and hence cannot be a carotid aneurism.

Guthrie says:—

"There are few surgeons in London who have not seen one case, at least, of bronchocele which has been mistaken for carotid aneurism, from inattention to the motions of the tumour as dependent on those of the larynx. A gentleman, an adjutant of militia, came, some few years ago, to me, with an enlarged lobe of the thyroid gland, to be operated upon for carotid aneurism, and was cured by iodine."

The following case came under my observation.

J. C., aged 30, entered Bellevue Hospital in 1869, with a pulsating tumour of small size on the right side of the neck, a little below the level of the prominent part of the larynx. The tumour had gradually been enlarging for several months; its pulsations were marked and synchronous with the heart; auscultation revealed an imperfect bruit. The tumour moved freely with the larynx, revealing the nature of the growth. Under the free use of iodide of potassium the tumour rapidly disappeared. The tumour had been diagnosticated aneurism of the carotid by a surgeon in large practice, and the question of ligature of that artery was to be decided.

In that affection of the thyroid body known as "pulsating or exophthalmic bronchocele," the tumour becomes enlarged, with violent pulsations

of the carotid and thyroid arteries, bruits are heard on auscultation, and there is prominence of the eyeballs. The symptoms have some resemblance to those of aneurism of the carotid, and Dr. Stokes notices an instance in which the mistake was made and a day was appointed for the operation of ligating the carotid. Such an error would be avoidable by attention to the symptoms and conditions which distinguish those cases.

VI. ORBITAL ANEURISM.—The various so-called orbital aneurisms generally have characteristic symptoms. There is protrusion of the eyeball, with pulsation of the mass, and a more or less diffused bruit over the temporal or frontal region, perceptible to the patient. But experience proves that these symptoms may all be present and of the most perfect character, and yet no aneurism be present.

Mr. Hulke relates a case (*Oph. Hospt. Reports*, April, 1859) entitled "*all the capital signs of orbital aneurism present, in a marked degree, but independently of aneurism or any erectile tumour.*" The following are the principal features of the case :—

A woman, æt. 40, admitted into King's Coll. Hospital, under Mr. Bowman; five months before, she was struck on left side of head and temple; next day had severe pain in left temple; aggravated when she moved or stooped; subsided after a fortnight, but was followed by a rushing noise like steam engine on same side of head; noise constant, but increased when the heart's action was quickened; gradually increased in loudness, and was heard by her husband; her sight began to be affected, and the left eye projected; there was general fulness of left orbital region; pupil dilated but active; sees distant objects perfectly, but is unable to read; angular vein and one over outer edge of orbit dilated; abrupt depression in lower border of orbit at articulation of malar and upper maxillary bone; loud sibilant bruit heard extensively over left side of head, but most intense above and in front of ear and synchronous with heart; similar bruit along course of great cervical vessels as far down as common carotid artery; fingers placed on closed lids rise and fall, and pulsation plainly felt; loud bruit heard when stethoscope is placed in front of the globe; no giddiness nor loss of memory. Diagnosis, orbital aneurism. Mr. Bowman ligated the common carotid artery; all pulsation and bruit arrested; next day she complained of great throbbing in right side of head, and sound of a distant drum on left side; eye less prominent and less congested; sight improved; one week later a bruit could be heard over the front of the eye and left forehead but more faintly; a little above and in front of the ear of same side a musical note of rather high pitch could be heard at each pulsation; on the eighth day the wound became phagedenic, and hemorrhages occurred which proved fatal.

Autopsy.—No aneurism nor erectile tumour was found; brain and all its vessels quite healthy; disintegrated coagula were found in the cavernous, transverse, and petrosal sinuses, and in the ophthalmic vein where it opened into the cavernous sinus.

The pathological appearances were regarded by Mr. Hulke as those of "phlebitis of the cavernous, transverse, circular, and petrosal sinuses." The bruit, he conjectured, might be occasioned by compression of the internal carotid artery, by the swollen walls of the cavernous sinus, against the side of the body of the sphenoid bone; the cranial bones would have formed a good medium of conducting the sound. The protrusion of the eyeball, as well as its pulsation, might have been due to plugging of the

ophthalmic vein where it joins the cavernous sinus. In commenting upon this case Mr. Hulke remarks:—

"Bruit, pulsation, protrusions of the eyeball, in short all the physical signs of orbital aneurism were present in a marked degree, yet no aneurism or erectile tumour existed. How much doubt this case throws on many of the recorded examples of aneurism of the orbit!"

VII. IRREGULARITIES OF BONE LEADING TO ERRORS IN THE DIAGNOSIS OF ANEURISM.—In the preceding causes or sources of error in the diagnosis of aneurism, the disease or condition simulated has been some form of swelling or tumour. In some cases the tumour has either been so placed upon or by the side of the artery as to receive its impulse, and in other cases the abnormal growth has developed within itself all the elements of error. But the error may arise from a very different cause, viz., by the elevation of the artery by displacement from beneath. In these cases there may be a small tumour which has an expansive pulsation, and a bruit, and on compression of the artery above the tumour, pulsation ceases and the tumour is diminished in size. All the scientific tests in such a case, even that of puncture, would rather confirm the surgeon in his error, as the following case, reported by Mr. Nunneley, illustrates:—

A coal miner, æt. 44, admitted to Leeds Infirmary November 16th, 1866; walked from the railway station to the Infirmary and up to his ward without assistance; had the look of a suffering man; though somewhat lame of the left leg, and using a stick, the limb was neither everted, inverted, nor shortened. The body was bent a little forward, but the whole foot was placed on the ground in walking; complained of stiffness and pain in the groin, and not in the hip. On the left side, just under Poupart's ligament, and in the course of the femoral artery, there was a swelling perceptible to the sight and touch, with decided pulsation, and certainly under the fascia lata; the tumour being not large but well defined; has never met with a fall, accident, or injury of any kind; twenty-two weeks previous to admission, while walking on level ground and in perfect health, suddenly felt something giving way in his groin, and was unable to continue walking; pain was intense; became helpless, and had to be carried home; since then has been unable to work or move the leg much; all his suffering is in the groin; there is neither tenderness nor deformity about the buttock; pulsation was decidedly lateral and apparently expansive, and was distinctly felt and seen. With the stethoscope bruit was plainly perceived, and very different from that in the right thigh; pressure on the femoral below the swelling increased size and distinctness of pulsation, and on the iliac lessened both as long as it was continued. In the popliteal space the artery was less perceptible than that of the right side. The limb was colder than the right one, and not swollen. The patient moved about in the ward by himself; a consultation was held, and all arrived at the conclusion that the case was one of a small aneurism, probably springing from an opening on the posterior part of the femoral artery, high up, and containing little if any coagulum. It was determined to tie the external iliac, which was done on the 22d November. The artery was felt to be of more than ordinary size. As the ligature was tied the tumour lessened and the pulsation ceased, thus confirming the correctness of the diagnosis to every one present.

The patient expressed himself much relieved. There was no peritonitis, but he died on the ninth day, probably from exhaustion, there being no other obvious cause.

On examination there was found a comminuted fracture of the neck of the femur, which must have occurred without symptoms or violence, being sus-

pected by no one, and of which there was no history. The abnormal distribution of vessels was most remarkable, and in connection with the unknown lesion exactly simulated an aneurism.—*Lancet*, 1867, II. 390, 430.

CONCLUDING REMARKS.—In concluding this paper it should be stated that the subject is by no means exhausted. Surgical literature affords abundant examples of errors in the diagnosis of aneurism from other forms of disease and growths than those mentioned. Perhaps, of the catalogue of cases unenumerated, glandular enlargements are most frequent. Collections of blood from ruptured veins and hernial tumours are more rarely reported, while uterine and ovarian tumours, stone in the bladder, etc., are rare and exceptional instances of error.

In reviewing the subject it is proper to refer again to the propositions with which the paper was introduced, and to the general statement that aneurism has no pathognomonic sign or symptom. It is apparent that each sign and symptom has in turn been found fallacious in the ever-varying conditions under which aneurisms appear. If we examine the propositions above-mentioned in the light of the preceding record of cases, the force of this conclusion will become manifest.

1. *A Tumour situated in the course of an Artery is of frequent occurrence without the presence of Aneurism; in itself the symptom is of no positive value.*—That a tumour may appear in the course of an artery, which is not aneurismal, has been frequently noticed in this paper. It has also been demonstrated that an aneurismal tumour may appear at such a distance from the course of the artery from which it springs as to mislead the surgeon as to its nature, and, if correctly diagnosticated, as to its origin. These cases occur more often in the abdominal region. An aneurism of the abdominal aorta may thus first appear in the inguinal region or groin, and mislead the most careful surgeon as to the nature and origin of the tumour. (See pages 308 and 309 of this Journal for April, 1873.)

2. *Pulsation may or may not be present when Aneurism exists; to be of value when present it must be expansive.*—This has been considered a crucial test, and yet it may be present and well marked without the existence of aneurism, as when an abscess partially surrounds an artery, or when a cystic or fibro-cystic tumour is in immediate relations with an artery, or in vascular tumours. (See pages 402–405 of this Journal for October, 1873.)

3. *Cessation of Pulsation when the Artery is compressed on the Cardiac Side with partial subsidence of the Swelling.*—Numerous examples have been given of the variable character of this test. Every tumour deriving its pulsation from its contiguity to an artery will cease to pulsate when the artery is compressed on the cardiac side, and these tumours will subside to the extent to which the fluid contents can recede from the surface. Cystic and vascular tumours placed over arteries and abscesses receiving the impulse of arteries, but so imperfectly circumscribed that the

contents fluctuate, will very accurately respond to this test. (See Mackenzie's case in this Journal, April, 1873, p. 315.)

4. *A Bruit may or may not be present in Aneurism; when present it is variable in its character.*—The variable and unreliable character of this symptom has been so repeatedly demonstrated that it does not require further notice.

5. *Exploratory Puncture may fail to give exit to Blood in an Aneurism, and may give a jet of Blood in several kinds of Tumour.*—In partially consolidated aneurisms puncture often fails to give exit to blood. And, again, blood may flow very freely, and even *per saltum*, as in vascular and malignant tumours, pulsatile tumours of bone, and puncture of the artery when displaced by growths.

To these conclusions we might add the following:—

6. *Diminished Pulsation in the Distal Portion of the Artery affected with Aneurism may or may not exist.*—Some authors lay great stress upon the diminished pulsation of the distal pulse of the arteries of the affected limb, and regard it as a reliable proof that aneurism is present. But the symptom has proved to be unreliable, nor can we fix its value. While diminished pulsation is generally present in aneurism, yet it may not be noticed when the aneurism is well marked. (See Mr. Paget's case, p. 18.) The pulse depends upon the freedom with which the blood circulates through the artery at the point of lesion; this will vary according to the nature of the opening, its situation, and the degree of compression by the tumour. When the lesion is large or irregular, or is situated at the commencement of a curve of the artery, it may receive the direct current of blood, and the force of the heart's impulse is largely expended at that point. Again, the pulse may be diminished by the pressure of any form of tumour directly upon the artery, and hence we may have diminished pulsation without aneurism.

It follows from these conclusions, not only that aneurism has no pathognomonic symptom, at least among those above given, but that the symptoms most relied on in the diagnosis of aneurism may be present when there is no aneurism, and may be absent when aneurism exists.

NEW YORK, 29 WEST 42D STREET, November 1, 1873.

ART. II.—*The Present State of our Knowledge of the Pathogenesis of Tumours.* By S. W. GROSS, M.D., of Philadelphia.

IN their histological construction, morbid growths differ from the normal tissues, which they often so closely resemble as to be indistinguishable from them in the arrangement of their constituents, which, instead of

being disposed after a known type, are thrown together in an irregular or capricious manner, and represent an excess of physiological development and growth. Every cellular element, every texture, whether of a simple or of a more highly elaborated nature, which enters into their composition, has its prototype in the growing or adult organism; whence it follows that neoplasms are the products of the same formative laws as the normal tissues, and are subject to the same physiological laws which not only preside over the development and further increase of the normal structures, but likewise regulate their continual renewal and their degenerations or transformations.

As it is not my object to review the various theories of the genesis of tumours, I will merely briefly allude to the almost exploded doctrine of their evolution from a plastic fluid or blastema, exuded from the blood, by a process of free cell or tissue production. Professor Bennett,[1] of Edinburgh, still adheres to his views, promulgated in 1855, in opposition to their exclusive origin from preëxisting cells, that the point of departure of all neoplasms is a molecular blastema, not, however, through a spontaneous generation of cells, but through the aggregation or condensation of the ultimate molecules contained in that fluid, which may not only produce nuclei and cells, but also generate tissues without the intervention of those elements. Broca,[2] who is the most bitter opponent of the cellular hypothesis of the development of morbid growths, not only sustains the views of Bennett, but enforces the doctrine that every neoplasm, whether benign or malignant, has its own particular pathological blastema.

This theory, in support of which not a single well-established fact can be cited, has been completely demolished by the researches of embryologists and pathologists, who have successfully established the general proposition that "every organized portion of the body which is not a cell must originate in or from cells." Remak,[3] more especially, maintained that in the production of embryonal cells, no other mode of cell generation occurs than that by segmentation or division; and he also, along with Virchow, His, Billroth, and other observers, so vigorously contended that the same process is in force in the pathological development of cells, that their derivation from preëxisting cellular elements alone has become one of the fundamental laws of modern histogeny. The free formation of nucleated masses of protoplasm in a fluid or plastic blastema lost, moreover, its last support in the discovery of the wandering connective tissue cells, which, as I shall attempt to show, play so important a part in the origin of morbid growths. Inasmuch, however, as these mobile elements are derived from the blood, and as they, along with an excess of nutritive fluid, ac-

[1] Principles and Practice of Medicine, 3d American edition, p. 121.
[2] Traité des Tumeurs, Tome I., Chap. II., Paris, 1866.
[3] Müller's Archiv, 1852, s. 47.

cumulate in the tissues, where they either remain stationary, or pass through ascending stages of development, the mind naturally reverts to the idea of an organizable fluid as the starting-point of tumours. Here we are dealing with a true plastic exudation, which is identical with the more recent terms—embryonal, germinal, or granulation tissue, the proliferation of connective tissue corpuscles, and the accumulation of wandering cells. From this new formation the majority of morbid growths are evolved; not, however, from a free blastema, but from the cells present in that fluid, the latter of which stimulates the former to activity and progressive multiplication. Hence the law established by Virchow, in 1855, of "Omnis cellula e cellula," is destined to remain as inviolate for the development of tumours, as for that of the physiological tissues.

If we assume the truth of the doctrine that all neoplasms are the offsprings of preëxisting cells, a question of very considerable histogenetic interest naturally arises, What elements act as the parent cells? To this Virchow answers that the young corpuscles of the more indifferent, functionless, or unripe tissues are the most common source of the material out of which tumours are constructed, while fully developed or physiologically perfect cells play an unimportant part in the economy of their origin and reproduction. Thus, the undermost or youngest layers of epithelium, particularly those of the rete Malpighi, serve as the matricular tissue of new growths derived from, or constructed upon the type of, epithelial structures. Tumours belonging to the connective tissue series are, for the most part, traceable to the fixed corpuscles of the unformed, or ordinary connective tissue, mucous tissue, and the red medulla of the bones; permanent cartilage and bone, which are examples of perfected connective substances, rarely serving as points of departure.

While it cannot be questioned that the majority of morbid growths spring from the connective tissue, it is by no means settled which of its cellular elements are principally concerned in their development; and it is equally undecided whether a cell belonging to a certain group can be the descendant of a cell of an entirely different system. Hence I have thought that, in giving a rapid sketch of the present state of the controversy on the genesis of cells and tumours, I might do some service by directing attention to investigations and discussions with which the American student is not sufficiently familiar.

The group of connective tissues forms, according to the doctrine first promulgated by Reichert,[1] a more or less continuous mass, on and in which are implanted certain other structures, as epithelium, nerves, and vessels, and serves as the framework of the entire organism. Accepting the correctness of this view, with some differences on histological points, Virchow asserted that connective tissue, or its allies, was universally dis-

[1] Beiträge zur Vergleichenden Naturforschung, etc. Dorpat, 1845.

seminated throughout the body, and, with Donders,[1] established the persistence of cells in mature connective tissue, and regarded them as being identical with the corpuscles of cartilage and bone.[2] From his investigations, which were commenced nearly a quarter of a century ago, he was led to regard, with slight restrictions, the connective tissue and its equivalents as the common stock of germs of the body, and to attribute the genesis of most morbid growths to the formative irritation and progressive proliferation of their fixed or stable corpuscles.[3] The principal members of the connective tissue system are the common fibrillar connective tissue, with its varieties, mucous or gelatinous tissue, adipose tissue, the reticulum of the lymphoid organs, and neuroglia; cartilage and bone, the latter structure including dentine. To these may be added, as histological equivalents, the endothelium of the blood and lymphatic vessels, and of the serous membranes, which stand in direct genetic relation to the connective tissue corpuscles. Hence, for example, sarcoma, fibroma, myxoma, lipoma, lymphoma, glioma, chondroma, osteoma, and odontoma result from the undue multiplication of the stable cells of the foregoing structures, and represent a hyperplastic process. Carcinomatous tumours, the characteristic elements of which are cells of an epithelial type, loosely heaped, without any intercellular substance, in spaces formed by the trabeculæ of connective tissue, are likewise, in accordance with this theory, derived from the same corpuscles, but by a process of heteroplasia,[4] in consequence of a change in the original type of the parent tissue.

Such, briefly, are the conclusions of the most prominent living oncologist on the development of certain new growths, and Virchow very justly complains that his views have been misinterpreted. So far from teaching that all tumours are generated in this way, he merely claims that the majority are, and fully recognizes the formative attributes of epithelial and other protoplasmic bodies. It is, however, to be perceived that the theory of Virchow is based upon two hypotheses: first, that the cells are engendered by the continuous proliferation of the fixed or indigenous corpuscles of the parent tissue of the neoplasm, the latter of which, therefore, substitutes the normal local constituents of that tissue; and, secondly, that dissimilar morphological elements may proceed from a common progenitor, through which the heteroplastic, or carcinomatous epithelial growths, can be traced to the connective tissue and its equivalents. In other words, epithelial tumours of hyperplastic origin, which are the descendants of preëxisting epithelial structures, constitute papillary and glandular neoplasms, and are of an innocent nature; while epithelial formations, which arise within

[1] Zeitschrift für Wissenschaftliche Zoologie, Bd. III., s. 348.

[2] Würzburger Verhandlungen, Bd. II., ss. 154, 314.

[3] Die Cellular Pathologie, 4te. Aufl., Capitel XX. Berlin, 1871, and Archiv 1853, s. 240.

[4] Op. cit., s. 570.

the connective tissue framework of the organism, are of heteroplastic origin, and represent heterologous, or, clinically speaking, malignant growths.

These doctrines, which met with general acceptation, and were upheld by the most competent authorities, appear to have been established, beyond the possibility of refutation, for upwards of ten years, when they received their first shock from Thiersch,[1] who, in 1865, again directed the attention of the German pathologists to their almost abandoned theory of the sole derivation of epithelial structures from epithelial germs, his views being based upon the development and growth of the embryo, and an observation of Remak, in which a similar position was maintained. A second and more serious blow was inflicted upon the hypothesis of the continuous growth of new formations from the stable connective tissue corpuscles, by the confirmation and proper interpretation of Cohnheim,[2] in 1867, of the remarkable discovery, made by Dr. Waller, two decades previously, of the exit of the colourless blood corpuscles through the vascular walls, as well as by the demonstration, by Von Recklinghausen,[3] of their presence and power of wandering in the tissues, and, finally, by the more recent observations of Stricker[4] on their multiplication by division; all of which established facts afford conclusive proof that broods of young cells are not always the offspring of fixed cells. As a natural result of the acceptance of the truth of these later researches, a reaction has set in, which not only places in doubt, if it does not even in great measure overthrow, the assumptions of Virchow, but also obscures the various theories of the origin of cells and neoplasms to such an extent, that, in their discussion, one finds little else than opposed and controverted views, and dogmas in every stage of assertion and rebuttal.

In the process of reproduction, it is now ascertained that all tissues arise from the cleavage masses, segmentations, or vitelline spheres of the fertilized ovum. So far as is known, these formative or embryonal bodies are morphologically and physiologically equivalent, and it is only when they become differentiated into the germinal or blastodermic layers, that they evince an established difference between their morphological attributes as well as their embryological and physiological functions. The skin, mucous membranes, and the glands, which are epithelial-bearing structures, proceed from the upper or horny, and the lower or intestinal gland leaflets only, while the connective tissue is produced from the middle lamina. From the very moment of the segmentation of the germinal disk into three layers, the cells cease to be equivalent, so that connective tissue formations are generated from connective tissue germs alone, and epithelial

[1] Der Epithelial Krebs, namentlich der Haut. Leipzig, 1865.
[2] Virchow's Archiv, Bd. XL., s. 1. [3] Ibid., Bd. XXVIII., s. 157.
[4] Studien aus dem Instituts für Experimentelle Pathologie. Wien, 1869.

formations from epithelial germs. A cell of the horny layer, or one descended from a cell belonging to that layer, for example, never assumes the functions of a cell of the middle leaflet, and is never converted into a connective tissue corpuscle, or a muscle, or a nerve fibre, which likewise primarily originate in the latter lamina. In a word, cells of a known kind live in a determined manner, and transmit to their progeny the characters imparted to them at the first formation of the germinal membranes.

Remak, to whom we are mainly indebted for these researches, maintained, as early as 1854,[1] that the same histogenetic law is in force in the pathological development of cells in post-embryonal life, and, as a corollary, that epithelium is derived solely from epithelial germs. In accordance with this view, primary carcinoma should never originate in organs in which epithelium does not normally exist, as in the bones and the brain; but the observations of the most reliable microscopists, as Cornil and Ranvier,[2] Virchow,[3] C. O. Weber,[4] Eberth,[5] and Arndt,[6] demonstrate the possibility of such an occurrence. Waldeyer,[7] who is the most determined of the partisans of the exclusively epithelial origin of carcinoma, denies the correctness of these observations, and refers such tumours either to the class of sarcomas, or, with Remak and others, explains their development by the straying of epithelial germs during fœtal growth to parts of the body where they do not belong, or to their persistence when they should have disappeared. This theory (for it is nothing more) was adopted by Thiersch for epithelioma of the skin, and by very numerous investigators for carcinoma of individual organs and tissues; and is extended by Waldeyer, Billroth,[8] and Lücke[9] to all tumours of this class without exception. Hence, they do not admit the occurrence of primary carcinoma in the brain, the bones, the muscles, the connective tissue, the lymphatic glands, the heart, the blood and lymphatic vessels, the spleen and serous membranes. In support of the assumption of the derivation of epithelium from epithelial germs alone, reference may be made to the experiments of Cleland,[10] Eberth and Wadsworth,[11] Hoffmann,[12] and Schüller,[13] on the nor-

[1] Deutsche Klinik, 1854, s. 170.

[2] Manuel d'Histologie Pathologique, 2e Partie, p. 377. Paris, 1873.

[3] Würzburger Verhandl., Bd. I., s. 106.

[4] Chirurgische Erfahrungen und Untersuchen, s. 343. Berlin, 1859.

[5] Virchow's Archiv, Bd. XLIX., s. 51.

[6] Ibid., Bd. LI., Heft. IV.

[7] Ibid., Bd. XLI., s. 470, and LV., s. 67, and Volkmann's Vorlesungen, Series 2, Heft. 3.

[8] General Surgical Pathology and Therapeutics, p. 627. New York, 1871.

[9] Pitha und Billroth's Hdbch. der Chir., Bd. II., Abth. I., Heft. II., Cap. XXXVII.

[10] Humphry and Turner's Journal of Anatomy and Physiology, vol. ii., p. 361. 1868.

[11] Virchow's Archiv, Bd. LI., s. 361.

[12] Ibid., s. 373.

[13] Ibid., Bd. LV., s. 159.

mal repair and regeneration of epithelial losses, from which the conclusion is drawn that the neighbouring epithelial cells are solely concerned in the process, other elements failing to undergo epithelial transformation.

In opposition to this dogma, many observers regard the connective tissue, its derivatives, or equivalents, as the sole genetic soil of carcinomatous tumours. Thus Virchow, Förster,[1] Weber,[2] Pohl,[3] Lortet,[4] and Cornil and Ranvier,[5] teach that the epithelial cells are the lineal descendants of the fixed connective tissue corpuscles. Koester[6] lays great stress upon the development of carcinoma from the endothelium of the lymphatics, which is merely a modified connective tissue corpuscle; and the participation of the muscle cells, which are likewise morphological equivalents, has been observed by Weber,[7] Karpowitsch,[8] Neumann,[9] Volkmann,[10] Popper,[11] and Turner.[12] An epithelial and a connective tissue carcinoma are recognized by E. Wagner,[13] W. Müller,[14] Langhans,[15] Leontowitsch,[16] and Demonchy;[17] while Hirschfeld,[18] Neumann,[19] and R. Maier[20] trace its development to connective tissue corpuscles, epithelial cells, and leucocytes; and Rindfleisch,[21] and Woodward,[22] in supporting its epithelial origin, also claim, for scirrhus, a derivation from the colourless blood corpuscles.

In searching for the protoplasmic element which is the most actively engaged in the genesis of morbid growths, many recent investigators are disposed to regard the leucocyte, lymph corpuscle, colourless blood corpuscle, amœboid, nomadic, or wandering cell, as this body is variously termed, as the living germ from which not only all tumours and inflammatory new formations, whether of a common or specific nature, arise, but which is also destined for the construction, maintenance, and renovation of the

[1] Ibid., Bd. XIV., s. 120; Canstatt's Jahresbericht, II., 1855, s. 29; Handbuch der Path. Anat. Aufl. 2, Bd. I. s. 302.

[2] Op. cit., s. 269; Pitha und Billroth's Handbuch der Chirurgie, Bd. I., Abth. I., s. 289; and Bd. III., Abth. I., Lief. II. s. 115.

[3] Virchow's Archiv, 1855, s. 348.

[4] Thèse Inaugurale. Paris, 1861. [5] Op. cit., Partie I. p. 166.

[6] Die Entwicklung der Carcinome und Sarcome, Abth. I. Würzburg, 1869.

[7] Virchow's Archiv, Bd. XV., pl. XI.

[8] Quoted by Rudnew, Jahresbericht für 1868.

[9] Virchow's Archiv, Bd. XX., s. 152. [10] Ibid., Bd. L., s. 543.

[11] Zeitschrift der K. K. Gesellschaft Ärzte in Wien, II. 1865, s. 37.

[12] Paget's Surgical Pathology, 3d ed. p. 810.

[13] Hdbch. der Allg. Path. Aufl. 4, 1868.

[14] Jenaische Zeitschrift f. Med. und Naturw. Bde. V., s. 172, VI. s. 461.

[15] Virchow's Archiv, Bd. XXXVIII., s. 497.

[16] Berliner Centralblatt, No. 13, 1869. [17] Thèse Inaugurale. Paris, 1867.

[18] Prajer Vierteljahrschrift, IV., 1870, s. 13.

[19] Comment. Acad. Regimenti Borussorum, 1869.

[20] Lehrb. der Allg. Path. Anat., 1871.

[21] Text-Book of Pathological Histology. Amer. ed., p. 166.

[22] The Minute Anatomy of Two Cases of Cancer. Washington, S. G. O., 1872.

animal textures. No other cellular constituent of the organism is endowed with so many vital attributes, and none is more widely diffused, so that an irritation, whether general or local, giving rise to a neoplasm, is almost certain to act upon this wandering element, when present, or, when absent, cause it to emigrate from the vessels. Above all other cells does it evince the phenomena of active life, by its powers of motion and migration, through which it is enabled to intrude itself into the finest spaces, and traverse the invisible openings known as the stomata of Cohnheim; by its self-nourishment and growth through the assimilation of an increased amount of formative or nutritive material from the blood; and, by virtue of this capacity of increasing its store of protoplasm, of breaking up into a colony of young corpuscles, which are endowed with the same powers of inherent activity and multiplication, and are finally differentiated into more or less perfect tissue.

It may be accepted as a law of histogenesis, that, when a cell has attained its proper physiological growth, it is no longer, or only slightly, capable of proliferation. Such a property resides only in a naked mass of protoplasm, as the colourless blood corpuscle, and cannot be said to be a characteristic feature of the connective-tissue corpuscle, which must rather be regarded as a finished body. In the formation of connective tissue, it is now ascertained that the fibrils, which represent the intercellular substance, arise from the outermost layers of fusiform cells, the remains of which consist of nuclei, surrounded by a small quantity of granular protoplasm. The connective tissue corpuscle is, therefore, included in a case of formed material of its own construction, and must, of necessity, be less susceptible of generating a young brood than a mass of protoplasm that has no such investment. There is, indeed, safe ground for assuming, with Billroth,[1] Golubew,[2] and Langerhans,[3] that the connective tissue corpuscle is merely a formed, constructed, or atrophied leucocyte. The experiments of Kremiansky, referred to by Billroth, throw much light on this point. After wounding small animals, and injecting cinnabar into the blood, the injuries were permitted to heal, and the cicatrices submitted to minute examination. The fusiform corpuscles were filled with the colouring matter, so that the conclusion is warranted that the white corpuscles assimilated the foreign particles, wandered into the inflamed tissues, and were then converted into stable cells.

It is now known that connective-tissue corpuscles are less abundant between the filaments of that structure in the adult, than was formerly supposed; and since the migratory power of leucocytes has been confirmed by numerous investigators, doubts have arisen whether any other bodies than these can proliferate. In spite of the remarkable progress of modern

[1] Wiener Medizinische Jahrbücher, Bd. XVIII., s. 23.
[2] Archiv für Mikrosk. Anatomie, Bd. V., s. 133.
[3] Virchow's Archiv, Bd. XLVIII., s. 304.

histology, it is astonishing that minute appearances are so differently interpreted by equally proficient observers. Hence it is impossible to affirm that clusters of young cells lying in close contact with each other, are derivatives of the indigenous cells of the matrix of the neoplasm, since it is to be remembered that they may be intruders from without. In the development of morbid growths, as in the inflammatory process, the precise origin of the colonies of young cells must remain an open question; the more especially, as the former cannot be submitted to experimental researches. The great uncertainty that prevails in regard to the generation of the morphological elements which are so abundantly evolved in inflammation—between which and the development of tumours there are many close analogies—is shown by the more recent investigations on the irritated cornea. The fissiparous multiplication of the fixed cornea corpuscles is denied by Cohnheim,[1] who asserts that the assemblages of cells are due exclusively to the immigration and proliferation of leucocytes in that tissue. This view appeared to have been shaken, and the original doctrine of Virchow on the multiplication, by division, of the cornea corpuscles to have been confirmed, beyond the possibility of refutation, by the researches of Stricker and Norris.[2] The question remained in this unsettled state until 1872, when, with a view to its solution, Axel Key and Wallis[3] conducted a series of experiments in a precisely similar manner, and decided that Cohnheim was correct; the cornea corpuscles taking no part in the new formation. By artificially causing particles of cinnabar to enter the fixed corpuscles of ordinary connective tissue, F. A. Hoffmann[4] was also convinced that the wandering cells were the sole sources of the masses of young cells, which appeared after irritating the tissue.

From the almost daily changes which are being made in histogenetic inquiries, it requires very nice judgment to reconcile the conflicting statements of different observers. Most of the discrepancies arise, doubtless, from a misinterpretation of microscopical appearances; but there seems scarcely room to question that a large proportion of the young cells that are so extensively met with in the development of neoplasms, are wandering leucocytes. Hence, I agree with Rindfleisch[5] and Billroth[6] in claiming for these elements an important rôle in the production, at least, of the simple, or histioid tumours. The same view is extended by other authors to epithelial formations. Classen,[7] in his comments on a case of epithelioma of the cornea and sclerotica, recognizes the wandering cells as the sole progenitors of the epithelial constituents; and J. Collins Warren[8]

[1] Virchow's Archiv, Bd. XLIX., s. 333.
[2] Studien aus dem Instituts für Experimentelle Pathologie, Wien, 1869.
[3] Virchow's Archiv, Bd. LV., s. 296.
[4] Ibid., Bd. LIV., s. 506.
[5] Op. cit., note, p. 94.
[6] Op. cit., Chapter XX.
[7] Virchow's Archiv, Bd. L., s. 56.
[8] The Anatomy and Development of Rodent Ulcer. Boston, 1872.

holds the same view in regard to that form of epithelioma known as rodent ulcer. Without adopting this exclusive theory, Hirschfeld, Neumann, Maier, Rindfleisch, and Woodward, as I have already pointed out, admit the participation of the colourless blood corpuscle in the production of the epithelial elements of carcinoma; while Biesiadecki and Pagenstecher advocate the same line of descent in the healing of wounds and chronic inflammatory processes.[1]

Our knowledge of the development and renewal of epithelial structures, it is thus to be perceived, is as yet most unsatisfactory. Their origin, respectively, from connective-tissue corpuscles, epithelial germs, and leucocytes, is upheld by many prominent investigators. With the view of harmonizing these perplexing opinions, it may be assumed, first, that each of these elements is capable of generating epithelium; a doctrine which is supported by numerous apparently settled facts of pathological histogeny; or, secondly, that the colourless blood corpuscles, that is, the wandering or mobile connective-tissue cells, are the common parents of all neoplasms, as well as the elements through which the tissues are regenerated.

It is now an admitted fact, that before a cell can proliferate, it must be freed from its surrounding connections, or become mobile. The opponents[2] of the hypothesis of the derivation of neoplasms from leucocytes pretend that, under the influence of formative irritation, the fixed cells of the connective-tissue and epithelial systems are mobilized, when they comport themselves as true wandering elements. The principal investigations adduced in favour of this view are those of Heiberg,[3] Eberth,[4] Hoffmann,[5] and Waldeyer and Carmalt,[6] in which are described increase in the size of, nucleation, and partial elongations, contractions, and outgrowths of epithelial cells, which seemed to be the initial steps of their division and migration. True locomotion and direct fission, however, were never observed. In his experiments on the irritated cornea, previously alluded to, Stricker witnessed similar phenomena in what he supposed to be the proper corpuscles of that structure; but he did not prove the division of these masses. These researches on the epithelial and stable connective-tissue cells have been repeated, and otherwise explained, by other microscopists, so that it is as yet impossible to decide whether the mobile elements present in the tissues are leucocytes, or the freed corpuscles of the tissues themselves. If mobility of cells be essential to their proliferation, it is scarcely necessary to invoke the theory of the release of local fixed corpuscles, since one of the most marked attributes of the leucocyte is its inherent power of migration; and, on this ground, the

[1] Vide Rindfleisch, op. cit., s. 101.
[2] Vide Virchow, op. cit., ss. 360, 390.
[3] Wiener Medizinische Jahrbücher, Heft I., 1871.
[4] Virchow's Archiv, Bd. LI., s. 361.
[5] Ibid., s. 373.
[6] Ibid., Bd. LV. ss. 83, 486.

inference is fair that it is principally concerned in the development of neoplasms.

In the construction of morbid growths, it appears to me that a most decided influence is exerted upon the collections of young formative cells, through which they are converted into tissues similar to, and often identical with, those in which they are infiltrated. By virtue of this law of analogy of formation, which was first framed by Julius Vogel for the blastemic origin of new formations,[1] wandering cells coming in contact, for example, with the different structures of the connective tissue system, tend to reproduce the morphological elements of that series. In this way originate the perfected histioid or simple growths, as fibroma, lipoma, and osteoma, in contradistinction to the unripe or imperfected tumours of this group, as the sarcomas, in which the young cells do not advance to higher grades of development. In the former, a portion of the protoplasm of the migratory cells is directly converted into connective tissue, fat, and bone corpuscles, while the remainder is transformed into intercellular connecting substance. Under the same law, which in this particular instance is equivalent to the "epithelial infection" of the German school, and the "action de présence" of French writers, a leucocyte coming in contact with, or insinuating itself between, preëxisting epithelial cells, is changed into an epithelial element. That such epithelial infection does occur, is shown in the process of healing of wounds and ulcers, in which the young granulation or wandering cells are converted into epithelial cells by mere contact with the peripheral epithelium; and the experiments of Reverdin on the transplantation of the skin demonstrate how readily the change ensues. In the same way may be explained the occurrence of secondary carcinomatous deposits in the lymphatic glands, bones, and other organs which proceed from the middle germinal layer, the infection taking place through the contact of vagrant young cells with the indigenous corpuscles of those organs. The influence of contact in determining the conjugation of cells, is seen, indeed, in the fecundation of the ovum, in which, from the date that the spermatic particles penetrate it, the changes ensue which lead toward the formation of a new being.

From our knowledge of the plan of development of the fertilized ovum, in which there is nothing to serve as a model for the differentiation of embryonal germinal tissue into epithelial and non-epithelial layers, no objection can be urged against the existence of a cell which is capable of becoming either a connective tissue or an epithelial cell. The three leaflets of the blastodermic membrane, from which are derived tissues, which, when perfected, are widely different in structure and function, spring from the same source—the segmentation spheres; and it is far from improbable that the representatives of these formative elements are still present, under

[1] Pathologische Anatomie, Bd. I., s. 170.

the guise of wandering cells, in mature life. The primordial fœtal cells and the colourless blood corpuscles are certainly very closely related, and may be regarded as the transitional organisms out of which the permanent tissues are constructed and regenerated.[1]

All our views in regard to the pathogenesis of tumours are hypothetical, and rest on no solid foundation. No one has hitherto seen, for example, the cell of carcinoma originate from the stable connective-tissue corpuscle, epithelium, or the wandering cell. Conclusions are drawn from the representations afforded by dead tissues; and it is not probable that direct observations will ever be made on this point. Hence, it is the duty of the impartial critic to examine the immense mass of enticing views that have been brought forward for the support of the various theories of the development of morbid growths, and adopt that which strikes him as being the least objectionable. Were I disposed to confine myself to a single hypothesis, I should advocate the doctrine that the wandering, or mobile, connective tissue cell is directly transformed into the tissues which enter into the composition of neoplasms; not by any independent action of its own, but by the law of analogy of formation. The adoption of such a theory is, however, scarcely warranted by the present unsettled state of our knowledge; so that I am led to sustain the more conservative views of many distinguished observers and experimenters, who teach that all the cells of the organism, whether fixed or mobile, epithelial or connective, investing or secreting, lend their aid in the development of tumours, but with the restriction, on my own part, that the migratory cell is principally concerned, as in the inflammatory process. In other words, the genesis of morbid growths is characterized by the hypernutrition and multiplication of the masses of protoplasm influenced by it, which are, as a rule, direct productions of the vascular and connective tissue systems.

PHILADELPHIA, October, 1873.

ART. III.—*On Thrombosis of the Cerebral Veins and Sinuses of the Dura Mater.* By JOHN A. LIDELL, M.D., of New York.

THE term cerebral thrombosis denotes that some one or more of the bloodvessels belonging to the brain is obstructed with a clot of blood or fibrin, or the products thereof, which have been formed from the blood itself at the place of obstruction; and, inasmuch as the brain possesses two distinct sets of vascular canals, one of which brings the blood to, and

[1] Compare with Stricker, Human and Comparative Histology, vol. i., p. 38. London, 1870.

the other carries it away from, the cerebral substance, we have two distinct varieties of cerebral thrombosis, namely, thrombosis of the cerebral arteries on the one hand, and thrombosis of the cerebral veins and sinuses of the dura mater on the other. They differ from each other as widely in respect to their anatomical features, causes, consequences, and phenomena, as the uses of the arterial circulation differ from those of the venous circulation, and as the functions of arterial blood differ from those of venous blood. Of the former, that is, thrombosis of the cerebral arteries, the writer published a pretty full account in the number of this Journal for April, 1873. He proposes now to give as thorough an exposition as he can of the latter, for he coincides with Dr. Lancereaux in the belief that this disorder has not yet sufficiently attracted the attention of authors and medical men at large. Much more attention, however, has been paid to thrombosis of the cerebral veins and sinuses of the dura mater than to thrombosis of the cerebral arteries, and a great many cases of it have been placed on record. The consideration or study of these cases will furnish the *matériel* for the following pages; and we may here remark that this essay is founded on the written histories of 128 cases, of which 58 are related or referred to by Prof. Von Dusch in his excellent memoir on "Thrombosis of the Cerebral Sinuses," and 70 have been observed or collected by the writer.

Clinical History and Varieties.—I. There is, in the *first* place, a *traumatic* form of thrombosis of the sinuses of the dura mater. The blood sometimes coagulates in one or more of these sinuses, directly, in consequence of local injury. In such cases, the traumatic lesion usually consists either of laceration of the walls of the affected sinus, or of laceration of some of the tributary veins with contusion of the walls of the sinus, and is generally associated with injury of the skull in the shape of compound comminuted fracture.

Mr. Morton related the following case, in which a lacerated wound of the superior longitudinal sinus was attended with thrombosis and secondary inflammation of the walls of that sinus, to the Pathological Society of London, April 17, 1848:—

CASE I.—"A healthy man, aged 24, was admitted to the University College Hospital for compound comminuted fracture of the os frontis, caused by a powerful blow from a quoit. The dura mater was uncovered and extensively separated from the skull. The superior longitudinal sinus was lacerated and bleeding freely. The stream of blood was almost as thick as the little finger. The hemorrhage was easily stanched, and the patient progressed favourably until the tenth day, when he became restless, and paralysis of the right side of the face, with inability to speak and to swallow, ensued. The pulse was 136, weak and tremulous. He died on the thirteenth day after the injury.

"*Autopsy.*—External wound nearly healed and healthy in appearance. On raising the skullcap a thick layer of fibrinous effusion and concrete pus was found on the surface of the dura mater, oblong in figure, and corresponding in extent to the injury done to the inner table. On slitting open the longitudinal sinus, a considerable mass of coagulable lymph was found therein, immediately behind the wound of its walls. This plug of fibrin was intimately united to the lining membrane of the sinus. A little further back the appearance of the

sinus was normal. Opposite the place of injury the walls of the sinus were thickened, softened, and very much injected with fine vessels carrying red blood; but the laceration which was produced by the accident was perfectly closed. A large effusion of pus was found on the surface and beneath the arachnoid membrane covering the right cerebral hemisphere. A considerable effusion of puriform lymph was found under the arachnoid at base of brain. A large quantity of sero-purulent fluid was present in the hollows at the base of the skull. Appearances similar to those described above were found on the left hemisphere, but in a much less degree. The white substance of the brain presented great vascular injection on both sides; but it was much more strongly marked on the right side. The ventricles were natural. The morbid changes in general were more strongly marked on the right side of the brain and its membranes than on the left, because the wound in the skull lay more on the right side of the median line than on the left." (*Transactions of the Patholog. Soc. of London*, vol. i. pp. 186–188.)

Comments.—In the above case sufficient time elapsed, between the formation of the coagulum and the death of the patient, for the red-corpuscles to disappear from it by undergoing the changes that are usually imposed upon them under the circumstances, and, therefore, on autopsy the thrombus was found to present the pale appearance belonging to a plug of fibrin or coagulated lymph. The inflammation of the walls of the sinus was of a later date than the formation of the thrombus, and entirely adhesive in character. If we bear in mind the circumstance that the blood-clot in cases of thrombosis usually becomes decolorized in the course of ten days or a fortnight, we shall be less likely to make mistakes in respect to the origin of any fibrinous-looking thrombi which may be found on autopsy.

This case was met with in the author's military practice.

CASE II.—The patient had sustained a gunshot fracture of the cranium. The blood coagulated in the superior longitudinal sinus because a considerable number of the veins which empty into the sinus were torn off, and the walls of the sinus itself were contused. Private B. K., Co. "G," 6th Ohio Cav., aged 21, and apparently of sound constitution, was admitted to the Stanton U. S. Army General Hospital, June 24th, 1863; he said that he had received a wound in the top of his head from a carbine or musket shot, three days before, in a cavalry combat, near Middleburg, Va., and that a surgeon extracted a part of a bullet and some splinters of bone on the field of battle. On examination we found a lacerated wound of the scalp, commencing near the junction of the coronal and sagittal sutures, and extending backwards about three inches, lying almost directly over the sagittal suture, but rather more on the right than on the left side of it. The wound penetrated through the scalp down to the skull, which was discovered to be fractured, and a fragment about one inch and a half in length by three-fourths of an inch in breadth, extending along the sagittal suture (more, however, on the right than on the left side of it) was found to be depressed about one-sixth of an inch, and firmly fixed. We supposed the superior longitudinal sinus to be injured, and considered this circumstance to increase the gravity of the case. The patient was conscious and rational, but complained of headache; pupils normal; deglutition good; pulse accelerated and rather feeble; left lower extremity paralyzed, but no other part was affected in that way. Directed the hair to be cropped close, the ice-bag to be applied to his head, absolute quietude

to be maintained, beef-tea for nutriment, and the bowels to be moved by a stimulating enema (℞. Magnes. sulph., ol. terebinth., āā ℥j ; aqua sapon. f℥xvj). Evening. The bowels being unmoved, the enema was repeated.

June 25. Morning. He had passed a restless night and was delirious; pulse 120 ; paralysis not increased. Ordered ice to be applied more freely to the head. Evening. No urine had been voided since noon ; introduced a catheter.

26*th*. Morning. Profound coma; respiration stertorous and slower than natural; skin hot and dry; pulse ranging from 65 to 80 ; left pupil widely dilated and not responding to the stimulus of light; right pupil closely contracted ; right conjunctiva injected with blood ; not only the left leg but the left arm also was now paralyzed ; right leg and right arm freely moved ; urine passed unconsciously in bed ; deglutition difficult. It was decided to trephine the patient with a view to relieve the compression of the brain. Accordingly this operation was performed by the author at midday. The cranium was exposed by making an incision through the scalp, two inches long, extending from the middle of the wound downwards towards the right ear, and dissecting up the two angular flaps. The crown of the trephine was applied on the right side of the depressed portion and a disk of bone removed; two fragments of broken bone were then raised with the elevator and extracted; one of them was about an inch and a half in length by three-fourths of an inch in breadth, and embraced all the tables of the skull, the other was a small piece of the inner table ; on the larger fragment the serrations of the sagittal suture were distinctly seen. The superior longitudinal sinus being thus uncovered, a copious stream of dark-coloured blood flowed away. I did not discover any laceration of the sinus itself, and the hemorrhage seemed to proceed from the open mouths of certain small veins running from the cranium into the sinus which had been torn off. This bleeding was readily stopped by the application, for a few minutes, of a pledget of lint wet with a solution of the persulphate of iron, and externally did not return. At the posterior and right lateral part of the hole in the skull the dura mater was found to be lacerated to the extent of half an inch, and a small quantity of broken-down brain-tissue flowed away through it.

After the operation the left pupil, previously much dilated and fixed, diminished in size and reponded again to light; the right pupil, previously contracted, expanded to the normal size, and the engorgement of the right conjunctiva perceptibly diminished; the stertor disappeared, and the breathing became natural; the pulse rose to 110, and the skin became moist; he recovered the power of deglutition, and took a considerable quantity of beef-tea, but he did not regain consciousness. I observed him, however, to stretch and yawn quite naturally three hours after the operation. Directed the application of the ice-bag to the head to be continued, and a stimulating enema to be again administered, which afterwards was reported as having acted well.

27*th*. Morning. Patient much worse ; respirations very frequent (60 per minute), and superior thoracic; chest full of bronchial rattles; diaphragm assisting but little in performing the respiratory movements ; pulse 130 and weak ; left side of body rigid and immovable, while he moved the right side freely ; muscles of face not paralyzed. As the morning advanced convulsive twitchings attacked the right side of his face, and, in the course of two hours, extended to the whole right side of his body, while the left side lost its rigidity, but was not invaded by the convulsive

movements. In the mean time his breathing became more rapid and laboured, his pulse more frequent and feeble, till 5 P.M., when he died.

Autopsy twenty hours after death.—On removing the scalp an elongated opening in the skull was exposed. It was about one and a half inches in length by three-fourths of an inch in width, not reckoning, however, the disk of bone removed with the trephine. It commenced one-fourth of an inch behind the coronal suture, and extended backwards and somewhat to the right of the median line. At and near the front end it embraced the sagittal suture, but the most part of the chasm lay on the right side of this suture. On removing the skullcap the dura mater was found to be lacerated at the posterior end of the chasm in the cranium. On raising the dura mater from the left hemisphere of the cerebrum, much pale serum escaped, and it was found to be extensively attached to the convex surface of this hemisphere by a dense layer of recent plastic exudation, of a pale lemon-yellow colour; this inflammatory product was more thickly spread over the anterior lobe than elsewhere. On raising the dura mater from the right hemisphere of the cerebrum, a considerable quantity of coagulated blood was found in the cavity of the arachnoid, spread out over the convexity of this hemisphere. Much blood was also found in the great antero-posterior fissure of the cerebrum, lying between the right hemisphere and the falx cerebri. But the largest collection of all was found, on removing the brain, at the base of the middle and posterior lobes of the right hemisphere. The extravasated blood altogether amounted to about three fluidounces. It was very dark-coloured, and did not coagulate firmly. The superior longitudinal sinus was obstructed by a firm fibrinous-looking coagulum which extended almost down to the torcular Herophili. The whole brain exhibited very great venous congestion. There was circumscribed softening (red) of the brain-tissue at the seat of injury, near the summit of each cerebral hemisphere. On slicing the brain nothing further that seemed remarkable was observed. The lateral, third, and fourth ventricles contained only the normal quantity of serum. As stated above, the extravasated blood was limited to the exterior of the right cerebral hemisphere, at summit, inner side, and base; but the inflammatory exudation was confined to the convex surface of the left cerebral hemisphere. In the account of this case as originally drawn up *in extenso*, the coagulum in the superior longitudinal sinus was not mentioned, partly from oversight, partly from supposing it to be of post-mortem origin, and partly because I was then unacquainted with the subject of cerebral thrombosis. Indeed, I did not then know that the blood ever coagulated in the sinuses of the dura mater during life. I am now, however, thoroughly convinced that this coagulum was of ante-mortem formation, and that it was the chief cause of the meningo-cerebral hemorrhage, and of the phenomena which attended the close of this man's life.

Comments.—It is probable that the wound in the above case was inflicted by a glancing bullet which impinged upon the skull at a very acute angle and with great violence. It is also probable that the sanguineous extravasation within the head, revealed by the autopsy, was due to occlusion of the superior longitudinal sinus with blood-clot, associated with laceration of some of the veins which pass into the sinus from the right cerebral hemisphere, that resulted from the fracture of the skull. The sinus being blocked up with coagulum, the return of venous blood through

it towards the heart was prevented, and thus the blood was led to escape in great quantity, from the lacerated veins, on to the right cerebral hemisphere. The symptoms which attended the fatal close of this case indicate that the arrest of the respiratory movements, or death, was directly occasioned by the extravasated blood, especially the part of it which collected at the base of the skull and compressed the medulla oblongata. Thrombosis of the superior longitudinal sinus, therefore, played a very important part in producing the fatal result in this case.

Furthermore, the leading symptoms developed during life were very clearly accounted for by the lesions discovered on examination of the brain after death. The paralysis of the left side of the body was due to compression of the right hemisphere of the cerebrum from extravasated blood, and the convulsive movements which involved the right side of the body resulted from the inflammation of the meninges on the convex surface of the left hemisphere of the cerebrum. The foregoing case, therefore, possesses great interest and importance in several different respects; and several points not mentioned in these comments will readily suggest themselves to the intelligent reader.

In the next case thrombosis of the superior longitudinal sinus had its origin in a local injury in the shape of cranial fracture and laceration of the walls of the sinus.

CASE III.—A Malay, a sailor, aged 24, was admitted to the London Hospital, April 19th, 1865, for compound fracture of the skull, the result of falling from the main-top-gallant mast, a height of about thirty feet. He was labouring under severe shock, but sensible. Mr. Adams endeavoured to raise the depressed portion of the skull, but was compelled to desist on account of alarming hemorrhage from the superior longitudinal sinus, which had been lacerated. Notwithstanding, the patient progressed favourably until the 28th, when he was seized with violent shivering early in the morning. It recurred in the evening, and his pulse rose to 120. He rapidly sank into a low or typhoid state, and died apparently of exhaustion, on May 6th.

Autopsy.—On raising the scalp the fracture was found to have extended in an oblique direction from the left temple to beyond the right parietal eminence, and thence it passed irregularly along the sagittal and lambdoidal sutures, leaving a triangular piece of bone inclosed between these three lines. The dura mater on the left side, under this piece of bone, was covered with a layer of dark, fetid, semi-fluid lymph, having every appearance of being the residue of effused blood partially absorbed and putrid. The superior longitudinal sinus had been opened, and was now blocked up beneath the fracture with dense fibrinous coagulum. The pia mater and arachnoid in the neighbourhood were of a dark greenish hue, and the underlying brain-substance presented a dirty gray appearance. The fracture extended across the middle fossa of the skull on both sides, and the back part of the ethmoid bone was also broken. (*Medical Times and Gazette*, May 27, 1865, p. 548.)

Comments.—How frequently thrombosis of the superior longitudinal sinus occurs as a consequence of contusion or laceration of its walls, it is impossible to say in the present state of our knowledge. No cases belonging to this category were placed on record until the last twenty-five years; at least I have not been able to find any. That traumatic lesions of this sinus do not always produce thrombosis thereof is proved by the

fact that M. Lassus relates three cases in his *Memoir on Wounds of the Superior Longitudinal Sinus*, wherein recovery took place, and this could scarcely have happened if the sinus had become blocked up with coagula. (*Memoirs of the Royal Academy of Surgery of France*, Sydenham Soc. translation, pp. 63–69.) The great English surgeon, Percival Pott, in a case of compound comminuted fracture of the skull, where the superior longitudinal sinus was left bare through a space at least two inches long, by the removal of the fragments of bone, opened the superior longitudinal sinus with a lancet and allowed the blood to flow, as a last expedient, until the countenance, which was much flushed, became pale, and the pulse, which had been full and strong, faltered considerably. The bleeding was easily stopped by the application of a bit of lint, with slight pressure, to the orifice. The patient was restored to consciousness, and retained her senses for several days; but a fever coming on, she became delirious and convulsed, and so died on the twelfth day after the bleeding. Upon *autopsy* a considerable abscess was found on the surface of the brain, on one side of the falciform process of the dura mater. (*Pott's Chirurgical Works*, vol. i. p. 196.) I infer from the cases wherein the superior longitudinal sinus was wounded that have been reported by M. Lassus and others, that this lesion is generally curable, and, therefore, that it is not often attended with occlusion of the canal of the sinus with coagula.

If, however, foreign bodies, such as spicula of bone, are driven into the superior longitudinal sinus, and remain unextracted, the patient surviving his injuries for some days, it is probable that they usually induce the formation of thrombi, as happened in a case to which we shall presently refer.

Again, in cases where thrombosis of a sinus of the dura mater has been produced by laceration of the walls of the sinus, the coagulum may be small in size and only fill in part the calibre of the sinus. An incomplete occlusion of this sort appears to have occurred in the following instance:—

CASE IV.—Mr. Pollock reported to the Pathological Society of London, January 17, 1848, a case of compound fracture of the skull, with laceration of one of the lateral sinuses. The man died more than a month after the accident of pyæmia, without having exhibited any symptoms of inflammation or irritation of the brain or its membranes. On *autopsy* the lateral sinus was found quite empty, with the exception of a thin loose coagulum, and the opening in it was quite free. (*Transactions of the Patholog. Soc. of London*, vol. i. pp. 183–185.)

Finally, instances of traumatic thrombosis of the sinuses of the dura mater are occasionally met with, wherein the laceration of the walls of the affected sinus is accompanied by the intrusion of a foreign body into the calibre of the sinus. Prof. Von Dusch quotes from Schmucker the following case belonging to this category:—

A soldier, aged 18, was wounded in the left temporal bone by a hand-grenade. After he had been trephined, feverish pyæmic symptoms, with cough, presented themselves. There was delirium, and death occurred on the twenty-first day. On *autopsy* it was found that a splinter of the vitreous plate, half an inch long,

had penetrated the superior longitudinal sinus. A puriform and polypous clot, of an atheromatous character, was also found in this sinus, and a portion of it obstructed the opening into the horizontal sinus. There were besides pus beneath the pericranium, purulent arachnitis, and extravasation of blood upon the inner surface of the temporal bone. (*Von Dusch's Memoir on Thrombosis of the Cerebral Sinuses*, p. 104, New Sydenham Soc. Translation.)

We should here remark that in this case the presence of a splinter of bone in the superior longitudinal sinus occasioned thrombosis; *firstly*, because it encroached on and narrowed considerably the calibre of the sinus; and, *secondly*, because it came into direct contact with the blood itself, whereby it induced the blood to give up its fibrin or coagulate, just as a piece of string suspended in a crystallizable solution induces the formation of crystals around itself. In cases such as the above, therefore, the process of coagulation usually commences around the foreign body at the place of intrusion or compression. The purulent arachnitis and the sub-pericranial suppuration may also have exerted an important influence on the subsequent history of the thrombus. It is not improbable that they induced it to undergo the series of changes which constitute puriform softening and disintegration. The presence of the splinter of bone in the sinus, however, so plainly and directly accounts for the formation of the thrombus, that it is unnecessary to seek any remote cause for its origin.

II. There is, in the *second* place, an *inflammatory* variety of thrombosis of the cerebral veins and sinuses of the dura mater. By this we mean that thrombosis of these vessels may be the result of inflammatory processes occurring in the neighbouring parts, the veins of which empty into or are connected with these sinuses—such, for example, as the scalp, the bones of the skull, the membranes of the brain, the substance of the brain, and the soft structures of the face. This variety of cerebral thrombosis is often met with; for, in an aggregate of 58 cases, Von Dusch found 32 in which the thrombosis was the result of gangrenous, erysipelatous, and suppurative inflammations of these parts; and, in an aggregate of 70 additional cases, the writer has found 50 in which it had an inflammatory origin. There are, however, two inflammatory disorders of the above-mentioned parts which are especially prone to induce thrombosis of the cerebral sinuses. They are the so-called *internal otitis*, on the one hand, and *anthrax of the face*, on the other.

1. With regard to otitis interna, we should state at the outset that thrombosis of the lateral sinus is often the connecting link between this affection and the cerebral and pyæmic symptoms which so frequently follow it. Lebert (*Virchow's Archiv*, ix. 81) has laid great stress on this point. Indeed, it is chiefly by this means that internal disease of the ear induces disease of the brain and pyæmia, especially the latter. But otitis interna usually leads to thrombosis of the lateral sinus by first occasioning caries of the petrous portion of the temporal bone. Prof. Von Dusch refers to twenty cases belonging to this category (*op. cit.*, pp. 88,

89). The writer has collected thirteen additional cases of the same sort, many of which possess extraordinary interest. The following case, recorded by Dr. Lancereaux, in which internal otitis and caries ultimately induced thrombosis of the right lateral sinus and death from purulent infection, affords a good illustration :—

CASE V.—A labouring man, aged 34, entered la Pitié, April 3, 1861, in the service of M. Gendrin. He had had a running from the right ear since the age of 14. This discharge ceased about fifteen days before admission, and, at the same time, he was seized with lassitude, chills, and febrile exacerbations, which the physician who was called erroneously ascribed to malarial fever. Two days before admission he had violent chills and delirium. In the evening after admission Lancereaux found him stretched out on his back, a prey to a febrile paroxysm, which passed off an hour later. His countenance was altered and rather yellowish, pulse frequent and small, chest normal, but he was delirious. Ordered leeches to the nape of his neck.

April 4. General icterus, without pain in region of liver; pulse frequent, fluttering, and gaseous; no disorder in heart; respiration rude; muscles of neck rigid; low delirium and moaning, without any localized pain.

5th and 6th. The icterus was more pronounced; the delirium became noisy, requiring the application of the straight-jacket, and there was spitting; stiffness of neck-muscles persisted; pulse more frequent and depressed; respiration more difficult; death on the 7th.

Autopsy.—The skullcup was sound, but the petrous part of the right temporal bone was altered, carious, and penetrable by the scalpel, which extracted from it a yellow, thick, and purulent matter. The corresponding lateral sinus was discoloured brownish; its walls were thickened, friable, and inflamed. Its canal was completely blocked up, to the extent of about two centimetres, by a brownish and yellowish coagulum, of a semisanguineous, semipurulent appearance. The meninges on the same side were injected. The brain-surface appeared too vascular, but the brain-substance exhibited only diminution of consistence. On the surface of the lungs there existed sanguineous infarctions, and numerous metastatic abscesses. The heart was softened, and the blood which it contained black and fluid. The liver was rather yellowish and softened. The kindeys and pancreas were in the same condition. The spleen was enlarged and much softened. (*Lancereaux de la Thrombose et de l'Embolie Cérébrales*, pp. 133, 134.)

Comments.—The history of this case is so well told that but few words of comment are required. The essential phenomena only are given. This man, after suffering for twenty years from otitis interna with caries of the petrous portion of the temporal bone, suddenly acquired the symptoms of pyæmia, and in about nineteen days he died. On autopsy, besides the caries, there were found puriform thrombosis and inflammation of the walls of the corresponding lateral sinus, together with the lesions of the lungs, spleen, blood, etc., which are usually found in fatal cases of pyæmia. The inflammation of the sinus was probably secondary to and induced by the thrombosis. We have accorded so much space to this case—firstly, on account of its great importance; and secondly, because the essential phenomena of it are so clearly presented.

CASE VI.—Mr. Henry Gray (*Transac. of Patholog. Soc. of London*, vol. ii. pp. 97–99) relates the case of a young woman, aged 19, who sank and died after suffering from inflammation of the right ear and its consequences for about six months. On *autopsy* very extensive caries of the mastoid and petrous portion of the right temporal bone was found. The right lateral sinus was

impervious from the presence of a fibrinous coagulum in its calibre. The dura mater and arachnoid exhibited increased vascularity with the effusion of lymph and purulent matter.

CASE VII.—Dr. Heale (*Ibid.*, vol. ii. pp. 271–273) relates the case of another young woman, aged 20, who was deaf and had long suffered from intense earache, with occasional fetid discharges from the left meatus. She was restless, sleepless, and occasionally delirious; finally, she got erysipelas, violent delirium, succeeded by coma, and died. On *autopsy* extensive caries was found. The left lateral sinus was full of coagulated blood mixed with puriform matter, and its anterior wall was very thick, soft, and ulcerated. The left internal jugular vein was full of matter. The vena innominata contained a fibrinous clot which projected into the descending cava. The lungs were filled with a frothy purulent infiltration, but not consolidated. The right lung had a small circumscribed abscess on its exterior. The liver was fatty, the kidneys coarse. A very large excavated abscess, with sinuses running in various directions and communicating with the carotid sheath, was exposed on the left side of the neck at its root.

CASE VIII.—Mr. Toynbee (*Ibid.*, vol. v. pp. 273, 274) relates the case of a girl, aged 16, who after complaining of uneasiness in, and discharge from, the left ear for about seven months, was seized with violent pain in the head, which went on increasing, and she died in three days after the appearance of acute symptoms.

Autopsy.—A dark-bluish patch, the size of half a crown, was found on the left lobe of the cerebellum, at the posterior part of the petrous bone. The gray matter was blue to the depth of one-eighth of an inch. There was slight softening beneath the discoloured spot. The posterior wall of the lateral sinus, where it is situated in the temporal bone, was of a dark colour and soft; the sinus itself contained, at its upper part, a firm coagulum of dark-coloured fibrin; at its lower part it was filled with dark-coloured pus. The anterior wall of the sinus adhered much less firmly to the sulcus lateralis than usual. The tympanic cavity contained a considerable quantity of scrofulous matter, which, by pressing on the posterior wall of the meatus, had produced a carious orifice in the bone. The membrana tympani was thick and soft, and on its surface were two dark-coloured polypi.

CASE IX.—Dr. Ogle (*Ibid.*, vol. x. pp. 28, 29) relates a case in which otitis interna was followed by caries, and thrombosis of several sinuses of the dura mater, etc. The patient was a woman, aged 22, who came into St. George's Hospital with febrile symptoms, albuminous urine, leucorrhœa, and sharp pain in the right ear, from which a considerable discharge was flowing. She had had scarlet fever several years before, and ever since had been subject to a discharge from the ear. The earache, however, had existed only about ten days. About two days after admission she had violent convulsions, which left her mouth drawn to the left side (the right side of her face being paralyzed) with convergent strabismus of the right eye. She complained much of headache, and was very restless and uneasy in the region of the chest. About a fortnight after admission she died.

Autopsy.—Much purulent matter was found beneath the pericranium in the right temporal region, and at this part considerable pus was met with in the veins of the diploë. Pus was also found between the dura mater and skull, at the posterior part of the middle cerebral fossa on right side. In one place the dura mater itself was in a softened, blackened, and sloughy condition. This place corresponded with caries of the bony part entering into the formation of the internal ear. The lateral, petrosal, and cavernous sinuses, on this side, were very prominent and hard; and on being opened, were seen to be filled up with firm, not very dark-coloured coagulum, laminated in one part, and disintegrated in another. A large vein full of dark firm clots was found near the mastoid process, passing through the cranium from without into the sinus. The arachnoid cavity, at the right middle cerebral fossa, contained some purulent and fibrinous material. A part of the middle lobe of the right cerebral hemisphere was very vascular, slightly softened, and contained a collection of purulent matter (abscess) about the size of a walnut. Purulent fluid was found

in right pleural cavity, and one or two purulent collections in upper part of right lung, with hepatization of surrounding tissue. Spleen very large, soft, and flabby.

CASE X.—Dr. Wilks (*Guy's Hospital Reports*, 1861, p. 167) relates the following case in which chronic otitis induced thrombosis of the lateral sinus, etc., and death. A man, aged 23, admitted very ill with pneumonic symptoms. He had disease of the temporal bone resulting from chronic otitis, but had been sick only three weeks. *Autopsy.* The lateral sinus next to diseased bone contained an adherent clot which was softening at the centre. The adjacent dura mater had a greenish colour, but the brain was not affected. Both lungs had suppurating lobular pneumonia.

CASE XI.—Dr. Wilks (*Ibid.* p. 167) also relates the following case wherein chronic ear-disease was attended with thrombosis, etc.: A man, aged 52, had long had disease of the temporal bone, when he was seized with the usual symptoms of pyæmia. *Autopsy.* An abscess extended down the neck from the ear: and the jugular vein was filled with a purulent coagulum. The bone was necrosed, and the corresponding lateral sinus full of softening clot; brain unaffected. Both lungs showed sloughing pneumonia and pleurisy.

CASE XII.—Dr. Wilks (*Ibid.* p. 167) relates another case of ear-disease attended with similar consequences: A man, aged 21, had had otorrhœa four years, arising from a blow on the right ear. A week before admission he was seized with shivering, vomiting, etc. He continued very ill, with constant rigors, and the neck became much swollen; pleuro-pneumonia then appeared, and pneumothorax followed. He died seventeen days after the attack. *Autopsy.* Brain healthy. Temporal bone necrosed. The adjacent dura mater of a green colour, and the lateral sinus filled with a clot, softening into a creamy fluid. Jugular vein in the same condition. In both lungs purulent pneumonia and pleurisy; and in the right one an abscess which had burst, producing pneumothorax.

CASE XIII.—Dr. Wilks (*Ibid.* p. 168) relates still another very interesting case belonging to the same category: A young man, aged 17, died in the taking-in-room, from pneumothorax, after having otorrhœa of the left side all his life. Two weeks before death he was taken with pain on left side of neck, accompanied by febrile symptoms and rigors. *Autopsy.* The left petrous bone was found much diseased, with the dura mater over it sloughing, and the brain opposed to it of a greenish colour. The jugular sinus was full of softening clot, which extended down into the vein. Left lung collapsed, and exhibiting a large rent, the result of sloughing; it contained several other patches of disorganizing pneumonia. The right lung also contained large patches of lobular pneumonia, and their pleural surface was covered with lymph. The jugular vein was filled with softening clot, and its walls were inflamed and occupied by lymph.

In the above nine cases internal otitis was complicated with caries or necrosis as well as thrombosis. But the first-named disease may give rise to thrombosis of the lateral and other sinuses of the dura mater and brain-trouble, without inducing caries or necrosis of the petrous portion of the temporal bone, as it did in the next four instances. This variety of otitis interna has not received sufficient attention from medical writers and practitioners. Concerning it Dr. Gee (*St. Bartholomew's Hospital Reports*, 1872, p. 25) says:—

"The connection which exists between necrosis of the pars petrosa and purulent encephalitis (abscess of the brain) has long been known; but the connection between otitis interna (unattended by any disease of the bone) and purulent meningitis . . . . has been for the most part overlooked." The same writer (*Ibid.* p. 32) also remarks: "I wish I had some facts to bring forward relative to the way in which the otitis leads to the meningitis."

The following cases are all the more important because they throw considerable light on the last-named point.

CASE XIV.—Dr. Dickinson (*Transact. Patholog. Soc. of London*, vol. xv. pp. 26–28) relates the case of a man, aged 20, who was admitted to St. George's Hospital, Dec. 17th, 1860, for brain-trouble resulting from disease of the ear. Three months before admission, a discharge of pus and serum occurred from the right ear. One month before admission, an abscess, which had appeared over the mastoid process, was lanced. Next he had headache, and a week before entering hospital, he was seized with epileptic fits. After that it was noticed that his left side was rather weak. He had never had syphilis. The fits returned at short intervals, he gradually became lethargic, then comatose, and died on the 25th.

Autopsy.—Much creamy pus in right arachnoid cavity. A light-coloured purulent-looking plug distended the right lateral sinus, and adhered closely to its walls. The microscope, however, showed that it did not contain pus, but only the *débris* of a softening or disintegrating thrombus. The same clot filled the torcular Herophili also, and extended a little way into the left lateral and straight sinuses. The posterior two-thirds of the superior longitudinal sinus was filled with greenish pus, which also extended into the veins coming from the pia mater of the right side. Anteriorly, the sinus was stopped up with blood-clot, and in front of that, normal. The pus had the microscopic characteristics. The membrana tympani was perforated, and the tympanic cavity contained sanious matter. Bare bone could also be felt in it with a probe. A small vein which passed directly from the tympanum into the right lateral sinus was filled with coagulum and converted into a solid cord thereby. This sinus had given way from ulceration in one place on the temporal bone, so as to let out some of its contents, which lay as soft white flakes between the dura mater and the bone. There was no appearance of caries about any part of the temporal bone.

Comments.—In this case the formation of the thrombus was directly due to the suppurative inflammation of the right tympanic cavity. The blood coagulated first of all in one or more of the small veins running from the tympanic cavity into the lateral sinus. This coagulum extended itself by prolongation into the right lateral sinus itself, the torcular Herophili, the left lateral, straight, and superior longitudinal sinuses, in such a way as to completely fill up the first-named two. Afterwards the thrombus softened or disintegrated rapidly in the sinuses, and excited inflammatory action in the surrounding walls thereof. Thus, the right lateral sinus became perforated by ulceration, and the superior longitudinal was converted into an abscess.

Dr. Dickinson (*Ibid.*, vol. xv. pp. 24, 25) also relates the following case:—

CASE XV.—A man, aged 22, was admitted to St. George's Hospital, April 25th, 1863, having a discharge from the right ear, a sore throat, a very weak pulse, and a very depressed state of the system. On May 2d he was attacked with rigors followed by the usual symptoms of pyæmia with metastatic abscesses in the lungs, and died a few days later.

Autopsy.—On raising the brain an ounce of shreddy pus broke out into the arachnoid cavity. A small round hole in the dura mater was found on the anterior face of the right petrous bone. This membrane was also separated from the bone by pus, which was traced to the lateral sinus. The calibre of this sinus and that of the internal jugular vein were occupied by pus and shreddy lymph. The wall of the sinus was destroyed by ulceration for the distance of an inch, on the side next to the bone, just above the jugular vein.

Through this opening the pus had escaped, burrowed under the dura mater, and issued by the round hole above mentioned. Around this soft adhesions had been formed, and the purulent matter, instead of escaping into the arachnoid cavity during life, worked its way into the middle lobe of the right cerebral hemisphere, and established an abscess there about the size of a hen's egg. Another abscess, about as large as a walnut, was established in the same manner, in the upper and anterior part of the right cerebellar hemisphere. The external orifice of the ear was denuded, the auditory canal laid bare, and the bone bathed with pus. The membrana tympani was gone. A probe passed deep into the sac came upon exposed bone, but there was no evidence of caries. The cranial aspect of the bone was carefully examined, and every part of it proved to be free from caries and inflammatory action. Both lungs contained many so-called metastatic abscesses.

CASE XVI.—Dr. Brinton (*Ibid.*, vol. vi. pp. 306, 307) relates the case of a young woman, aged 18, who was admitted to the Royal Free Hospital, about three weeks after a severe attack of scarlatina. She lay in a state of deep drowsiness; pulse very quick, small, and feeble; surface cold. The left ear seemed quite deaf, and poured out a sanious discharge from its external meatus. The drowsiness soon deepened into coma, in which state she died about a week after admission.

Autopsy.—Cavity of left tympanum inflamed and filled with pus. The adjacent mastoid cells seemed softened and infiltrated with pus. The coats of the lateral sinus, lying on the mastoid portion of the temporal bone, were soft, thick, and detached from the subjacent bone. The calibre of the sinus in this region was filled to distension with puriform matter, which appeared to be isolated in either direction by plugs of clotted blood. Finally, the contiguous part of the left lateral lobe of the cerebellum was occupied by a collection of pus (abscess) of the size of a very large walnut.

Comments.—This case is important because it shows so well some of the occasional consequences of scarlatina. It is also quite interesting because acute disease of the mastoid cells but rarely destroys the patient. In this instance, however, the morbid process which had been kindled in the mastoid cells by spreading to them from the tympanum, extended from the cavity of these cells to the lateral sinus through the medium of the veins which empty into it, and not, as usually obtains, through the agency of carious disease of the bone. Thrombi were formed in the tributary veins, which extended themselves by prolongation until they entered and occluded the lateral sinus. The central part of the main thrombus then underwent puriform softening or disintegration, and excited inflammatory action in the surrounding walls of the sinus.

Dr. Ogle (*Ibid.*, vol. iv. pp. 25, 26) relates the following case, in which thrombosis of the lateral, of both petrosal, and of the cavernous sinus, on the left side, and the left ophthalmic vein, occurred in an epileptic subject, who also had inflammatory disease and suppuration of the left ear.

CASE XVII.—A woman, aged 22, married, and the mother of one child, became the subject of severe epileptic fits. About three weeks before death she was attacked with persistent retching and vomiting, and excessive discharge from the left ear. She had often complained of pain in the ear and headache. Delirium came on, and she was brought to St. George's Hospital. Her face was then much flushed, and the left side of her neck and face was considerably swollen. The left eyeball protruded exceedingly, and there was ptosis of the left eyelid. The conjunctiva was vascular, and all the external parts of the eye wrinkled and œdematous. The eyelids were red and œdematous. The left pupil was slightly dilated, but answered well to the stimulus of light. The

right eyelids were natural and the movements of the eyeball unrestricted, but its pupil was greatly dilated, and only slightly responded to the stimulus of light. The patient asserted that she saw best with the left or the protruding eye. The left ear was totally deaf, and gave issue to a very offensive discharge. There was great difficulty in opening the mouth and in swallowing, as well as occasional hiccough, and slight cough without expectoration. Pulse 150, and regular; respiration 68; tongue and lips dry and baked. During that night the patient became very delirious, and much difficulty in swallowing appeared. Coma preceded death, which occurred but a few hours after admission to hospital.

Autopsy.—Dura mater much adherent to bone over summit of left cerebral hemisphere, and the subarachnoid connective tissue generally contained much bloody fluid. The tentorium was firmly adherent to the cerebellum on the left side, and, at the base of the brain, the dura mater was covered by a layer of soft yellow fibrin. The lateral as well as both petrosal sinuses, and the cavernous sinus on the left side, contained much parti-coloured fibrin, which in many places adhered very firmly to their parietes. The left ophthalmic vein also contained fibrin, adherent to its walls; and within the left orbit was a considerable quantity of purulent fluid pushing forward the eyeball. The substance of the brain, on section, was found to contain great numbers of bloody points; and, in the right hemisphere, a little above the level of the corpus callosum, and about an inch from the external surface, was an oval patch of softened brain-tissue, of a pinkish colour. The ventricles contained much limpid fluid. There was considerable disease of the tympanum, with destruction of the membrane on the left side, but the internal ear was unaffected. There was recent fibrin in the pleural sacs, and in one or two isolated places the lungs were hepatized. The heart was natural; the kidneys were fatty, but the other abdominal organs presented nothing worthy of notice.

Comments.—The last four cases have been related with considerable minuteness because, among other reasons, Prof. Von Dusch does not make any mention of such instances as they — instances in which otitis produces thrombosis of the cerebral sinuses, meningitis, and death without the intervention of caries of the petrous bone. At the same time these cases possess a good deal of importance, for they show very clearly how otitis following scarlatina, for example, may produce brain-trouble and death in the course of a few weeks, as it did in case No. XVI. In the last case, also, it is probable that the formation of the thrombus began in some of the veins which lead from the tympanum to the left lateral sinus, that it extended by prolongation from them into this sinus, and thence in turn into the petrosal and cavernous sinuses, and the ophthalmic vein, of the same side. The orbital abscess and the protrusion of the left eye resulted from the thrombosis of the ophthalmic vein.

2. We shall next take up the cases of *anthrax of the face*, which prove rapidly fatal. In these cases thrombosis of the facial, frontal, or temporal vein, of the ophthalmic vein, and of the cavernous and other sinuses of the dura mater, usually furnishes the connecting link between the local disorder on the one hand, and the cerebral and pyæmic symptoms which so frequently follow it on the other. Although Prof. Von Dusch does not mention anthrax of the face as a cause of cerebral thrombosis, it seems to me pretty clear that thrombosis plays even a more striking part in the fatal cases of this disease than it does in those cases of otitis interna

which we have just described. To Dr. Ch. Trüde, a Danish physician, belongs the credit of first showing that thrombosis and phlebitis of the above-mentioned vessels are present in cases of rapid death from furuncle of the face, and are the chief causes of the fatal result. The next four cases were observed in the Friedrich's Hospital at Copenhagen. The first two were published by Trüde himself.

CASE XVIII.—A labourer, aged 19, said to have been sick two days with violent fever, came into the hospital February 3, 1855. He lay in a semi-conscious state, with rapid, panting breathing. The whole right side of his face from the upper lip to the forehead was greatly swollen. The right half of the upper lip and the right ala nasi felt hard, were shining-red, and, on the latter was seen a small yellow pustule, as well as a smaller, red, pointed elevation. The cheek and the eyelids were œdematous. The skin was dry and burning hot; pulse 130, expanded; respiration deep, 48; urine discharged involuntarily. Auscultation showed nothing morbid. On the following morning the patient died. Nothing was said about the autopsy, but an analogous case of erysipelas of the face was added for illustration, in which there were thrombosis and phlebitis of the facial and ophthalmic veins and of the cavernous and transverse sinuses, as well as lobular pneumonia in both lungs, and one abscess in the right lung. Spleen enlarged, softened, and light-violet in colour. (*Schmidt's Jahrb.*, B. 110, pp. 302, 303.)

CASE XIX.—A man, aged 47, came into the surgical division of the Friedrich's Hospital, April 11, 1855, having got, two days before, a large swelling of the upper lip, that commenced at the right nostril, from which yellow matter was discharging itself since that time. Patient had not slept during the previous night; had anorexia, thirst, and sometimes chills. The whole upper lip was greatly swollen, tender, pretty hard, and here and there covered with small dark spots and crusts of a brownish colour. Both cheeks and eyelids were red and swollen. The eyes were shining, the conjunctiva somewhat injected, the skin hot, the tongue dry, the pulse 104. On the inner side of the upper lip some small yellow excoriations were visible. Patient sure that he had not been in contact with sick horses. Diarrhœa—stools several times on the 11th. Ordered a demulcent cataplasm, and mistura acida in a mucilaginous vehicle. April 12. Patient delirious all night; urine discharged involuntarily; pupils contracted; eyes motionless; upper lip covered with small pustules. To the mistura acida tinct. opii simplex was added, which caused the delirium to be less vehement. Patient fell into a state of lethargy which gradually deepened into stupor. At 4 o'clock next morning he died.

Autopsy.—The upper lip was found infiltrated with several small abscesses. The infra-orbital vein, and the ophthalmic vein, both facial and cerebral, contained matter which extended upwards into the cavernous sinus. The brain was normal. (*Schmidt's Jahrb.*, B. 110, p. 303.)

CASE XX.—A man-servant, aged 28, entered the Friedrich's Hospital, December 1, 1859. Four days before, a small painful furuncle appeared on his left temple. Afterwards, pains shooting towards the shoulder, cough, and oppression of the chest were added. On admission he complained of headache, with some dizziness, anorexia, and loss of sleep from the pain. Skin hot; pulse strong, full, 100. Some cough. Auscultation gave nothing abnormal. There was a furunculoid swelling, surrounded by an erythematous margin on the left temple. During the night the swelling extended itself over the zygomatic and ocular regions, and presented a dirty erythematous appearance. The patient was delirious. In the morning there were vomiting and loss of consciousness. Pulse 60. The left eye was now protuberant, but could be moved; pupil contracted and motionless. During the day he lay unconscious, with rattling respiration. Urine drawn with a catheter. It was dark, alkaline, and contained considerable albumen and sugar. On the evening of the third day he died.

Autopsy.—Furuncle infiltrated with thick yellowish matter. Tissues of forehead, cheek, and left orbit infiltrated with bloody serum. The ophthalmic

vein was full of thick chocolate-coloured purulent matter, which extended also into the cavernous, circular, and petrosal sinuses. Its inner surface was discoloured and roughened. The inner coats of the sinuses were congested and softened. The membranes of the brain were injected with blood and infiltrated with matter. Brain-substance softened. No lesion of other organs. (*Schmidt's Jahrb.*, B. 110, pp. 303, 304.)

CASE XXI.—A law-student, aged 21, always weak-chested and subject to blood-spitting, after having furuncles on various parts of the body, was attacked with one on the upper lip beneath the septum nasi, Feb. 10, 1860. It enlarged rapidly, and burst on the 14th. About this time chills and febrile paroxysms appeared, with cough and blood-spitting, and the swelling extended up the left cheek to the eye. He came to the Friedrich's Hospital, Feb. 16th. Then his breathing was short and difficult, with cough, and purulent sputa mixed with blood. Whole left side of face greatly swollen; upper lip and cheek hard, not tender; forehead œdematous; eyelids swollen, shut; pulse 120. On Feb. 17th the swelling increased and became darker, and exophthalmos with dilatation of pupil appeared. He was delirious. The urine was drawn by catheter. It was slightly alkaline, and contained albumen and sugar. At one o'clock he died.

Autopsy.—An abscess as large as a small nut in left part of upper lip; surrounding tissues infiltrated with matter; a branch of the facial vein extending from the abscess to the inner canthus of the left eye contained thin matter throughout; it anastomosed with the ophthalmic vein. The latter was filled through its whole length with a chocolate-coloured, thick liquid, in which appeared streaks of puriform matter. In the surrounding tissue of the orbit there was much bloody infiltration. The walls of the vein were thickened and intimately connected with the surrounding infiltrated tissue. The inner surface of the vein was dark-red, softened, and denuded of epithelium. The left cavernous sinus contained the same chocolate-coloured liquid, and its inner surface appeared just like that of the ophthalmic vein. The affection extended through the circular sinus to the right cavernous. In no organ were lobular abscesses found. In the chocolate-coloured liquid taken from the left ophthalmic vein and cavernous sinus the microscope showed many unaltered blood-corpuscles, with numerous highly granular cells, which looked, on the addition of acetic acid, like white blood- or pus-corpuscles. In the lungs were signs of far-advanced tuberculosis. (*Schmidt's Jahrb.*, B. 110, p. 304.)

Comments.—The account of these four cases has been compressed as much as could well be done without destroying their utility. These abstracts, however, show very clearly, I think, the way in which anthrax of the face, especially of the upper part thereof, usually induces brain-symptoms, septicæmia, and pulmonary infarctions and abscesses, as well as the reason why this disease generally proves so dangerous and so quickly fatal. These result mainly from the production of thrombosis in some branch of the facial vein connected with the anthrax, and from the extension of the thrombosis and phlebitis, thus lighted up, along the facial vein into the ophthalmic vein and the cavernous and other sinuses of the dura mater—venous canals which are all continuous. In the above cases the post-mortem evidences of thrombosis and phlebitis of these vessels, such, for example, as the presence of softening blood-clot and puriform matter in their calibre, with injection, thickening, and softening of their walls, and discolouration and denudation of their inner surface, were unmistakably found. The relationship which exists between these morbid processes and facial anthrax as their starting-point was also fully proved. The following cases belong to the same category, and will serve a very useful purpose for illustrating still further this branch of our subject :—

CASE XXII.—Reported by Mr. Stephenson (*Med. Times and Gaz.*, 1862, ii. pp. 195, 196). A night-watchman, aged 23, ill-fed, was admitted to St. Bartholomew's Hospital, under Mr. Paget, April 3, 1862. His attack began five days before, with headache, and a dull aching pain about the left ala nasi, where a pimple was observable. Two days later the nose became very red. April 4. Face generally œdematous; alæ nasi very much swollen, tense, and of a dusky-red colour, especially the left one, which presents a distinctly carbuncular swelling, with six or eight pustules scattered on its surface; both eyes fixed and prominent, particularly the left one; it protrudes between the lids and prevents their closure; no delirium. April 5th. Nose more livid and swollen; pustules more numerous; left eye more protuberant; cornea more hazy and puckered. During the day he vomited and became unconscious, talking deliriously at times and trying to get out of bed. Pulse 92; respiration 40, and rather stertorous. He sank into coma and died at 5 P. M. on the 6th.

Autopsy.—Adipose tissue of left orbit reddened and slightly infiltrated with pus. Left ophthalmic vein much distended with thick puriform matter stained with blood (microscopic examination showed it to be degenerate blood-clot). Lining membrane also stained with blood. Left cavernous sinus filled with a semi-purulent blood-clot similar to and continuous with that in the ophthalmic vein. Circular sinus also filled with the same material; here it stopped. Right orbit and cavernous sinus in a similar state. Brain-surface dark and congested; veins distended; meninges inflamed; a small quantity of sero-purulent lymph on outer part of right hemisphere, and a much larger quantity of similar matter smeared over the base of the brain; pyæmic spots in both lungs.

Dr. Reverdin (*Archiv. Gén. de Méd.*, 1870, t. i. pp. 661–664) has published the following case observed by Dr. Castiaux:—

CASE XXIII.—A woman, aged 62, entered la Salpêtriére, May 26, 1869, for an abscess of the leg, which was opened, and her condition became satisfactory, when, on June 3d, an acuminated furuncle, surmounted by a pustule, appeared on the right eyebrow, about its middle; cephalalgia; nausea; pulse 96; temperature in axilla 38°. Afterwards the disease spread rapidly. June 10th. Coma; continuous trembling of hands and lips; eyelids closed, œdematous, red, and shining; the right lids, however, were separated by a projecting red chemosis; pulse 100; temperature in axilla 40°.2 to 40°.4; respiration 40. On June 11th she died.

Autopsy.—Supra-orbital vein large and full of puriform matter; ophthalmic vein twice as large as normal and filled with almost pure pus; walls thickened and lining membrane red; right cavernous sinus filled with pus; left cavernous sinus also contains a small quantity of pus. The gulf of right jugular vein filled with pus, but the jugular itself does not contain any. No trace of meningitis at base of brain; copious subarachnoid effusion of serum on convexity; lateral ventricles distended with serum; metastatic abscesses in right lung, spleen, and kidneys; bladder softened, thinned, its projections softened, and there were pigmentary spots.

Dr. Dubreuil (*Gaz. Hebd.*, 1863, pp. 765, 766) has reported the following case, in which furuncle of the nose was followed by thrombosis of the fronto-parietal and ophthalmic veins, exophthalmos, and death:—

CASE XXIV.—A shoemaker, aged 45, entered Saint-Antoine, January 26, 1863. There was considerable swelling on left side of nose, which began some days before in a small pimple that he compared to a boil. On the 28th the tumefaction had extended so as to involve all of the nose. February 1st. Left eyelids swollen and concealing the eyeball. On the 6th he was comatose, and on the 9th he died.

Autopsy.—In each orbit an abscess was found behind the eyeball. Puriform matter was also found in each ophthalmic vein, and in the anterior part of the cavernous sinuses. The pus was confined in each sinus by an adherent clot behind it. The pia mater was infiltrated with pus in the left Sylvian fissure. No trace of purulent infection was found.

Dr. Ledentu (*Gaz. Hebd.*, 1865, pp. 326, 327) has related the following case, in which furuncle of the forehead was followed by thrombosis of the ophthalmic veins and of several sinuses at base of skull :—

CASE XXV.—A lemonade dealer, aged 22, came into Hôtel-Dieu, Feb. 6, 1864. A furuncle of the size of a small hazel-nut occupied the left superciliary region, near root of nose; left eyelids much swollen and pale rose-coloured; ocular conjunctiva chemosed yellowish or serous; left eyeball immovable and notably protuberant; pupil contracted and insensible; vision abolished. The patient referred the beginning of his attack to Jan. 28th; the swelling of the eyelids to Feb. 2d; then the sight was already impaired. Feb. 7th. Exophthalmos considerably increased. He sank and died in the evening, without convulsions or coma.

Autopsy.—Both ophthalmic veins contained reddish-brown matter, studded with whitish striæ—that is, a mixture of pus and coagulated blood. The cellulo-adipose tissue of the orbits was infiltrated with serosity. The cavernous and circular sinuses contained semi-liquid, purulent-looking matter, like that in the ophthalmic veins: the transverse sinus was full of pus not mixed with blood. The other sinuses contained only some black and soft clots. Pus was found in the meninges of almost all the base of the brain. The thoracic and abdominal organs did not present any trace of metastatic abscesses.

Dr. Ledentu (*Gaz. Hebd.*, 1865, p. 327) has also related the following case, in which a furuncle on the right temple was followed by thrombosis of the ophthalmic veins, and of the cavernous, circular, transverse, and right superior petrosal sinuses :—

CASE XXVI.—A young man, aged about 15, was sent to Hôtel-Dieu from the prefecture of police, June 11, 1864. He had a large furuncle on the anterior part of right temple. The hairy scalp and face were extensively occupied by an erysipelatous swelling. The tumefaction of the eyelids covered up both eyes, particularly the right one. Eyeballs immovable, protuberant, and presenting considerable serous chemosis. He had calm delirium and high fever. On the 12th he died.

Autopsy.—The veins of right temporal, frontal, and nasal regions contained coagula and appeared inflamed. The angular veins in their upper part, and the ophthalmic veins in their whole extent, contained puriform matter. Similar matter was also found in the cellulo-adipose tissue of the orbits, around the ophthalmic veins and in the cavernous, circular, transverse, and right superior petrosal sinuses. The lateral sinuses were intact, and contained only some clots of recent formation. The brain, especially the part bordering on the fissure of Sylvius, rested on a thin purulent stratum. The meshes of the pia mater were infiltrated with pus in the same locality; arachnoid covered with thin false membrane. Nothing abnormal on upper surface of brain. The lungs contained a great number of small red nodules, doubtless metastatic abscesses in process of formation.

The editor of the *Lancet* (October 5, 1872) relates a case in which anthrax of the upper lip gave rise to thrombosis of the ophthalmic vein and of the sinuses at the base of the skull :—

CASE XXVII.—The patient was a young married woman. The initial symptom was an irritable-looking pimple on the left side of upper lip. It was followed by œdematous swelling of an erysipelatous character. Chemosis and protrusion of one of the eyes from intra-orbital abscess, paralysis of an upper extremity, much swelling of one side of neck, and acute pulmonary disease, with pyæmic rigors and fever, appeared, and ended in death. On *autopsy*, pus was found in the orbit, and puriform matter in the ophthalmic vein, cavernous sinus, and internal jugular vein, with softening of the cerebral substance, and pneumonia.

Comments.—The account of the last six cases has also been compressed as much as seemed compatible with utility. In their general or essential features these cases accord in a striking manner. Each patient had anthrax of the middle or upper part of the face, attended with œdematous and erysipelatous inflammation of the surrounding skin and subcutaneous tissues which rapidly extended itself, also great swelling of the eyelids, with chemosis, more or less exophthalmos, more or less cerebral disturbance, great debility, and death occurring in the course of a week or two from the commencement of the attack. On *autopsy*, there were found in each case thrombosis with puriform softening or disintegration of the coagula, and phlebitis, probably secondary in character, commencing in the veins connected with the anthrax, and extending along their canal into the corresponding ophthalmic veins, and thence into the cavernous and other sinuses at the base of the brain, the anthrax being in every case the starting point of the destructive process. On critically examining these cases, however, they will be found to differ considerably in minor particulars. For example, in Case XXII., the initial pimple was located on the left ala nasi; in Case XXIII., on the right eyebrow; in Case XXIV., on the left side of nose; in Case XXV., on the left forehead near root of nose; in Case XXVI., on the right temple, and in Case XXVII., on the left side of upper lip. But it is worthy of note that in each instance the disease began in the central or upper part of the face in relation with the branches of veins that anastomose freely with the ophthalmic vein which itself empties into the cavernous sinus. Again, with regard to inflammation and purulent infiltration of the membranes of the brain; this complication was present in Cases XXII., XXIV., XXV., and XXVI., but absent in Cases XXIII. and XXVII. Finally, with regard to pulmonary infarctions and pulmonary abscesses; they were present in Cases XXII., XXIII., XXVI., and XXVII., but absent in Cases XXIV. and XXV. These observations show that when anthrax of the middle and upper parts of the face proves rapidly fatal, neither of these complications is constantly or necessarily present. Other points of dissimilarity will readily suggest themselves to the attentive reader. Thus, a discovery of great significance is made to stand out in bold relief by a review of this group of six cases, as well as by a review of the preceding group of four cases (making altogether a survey of ten cases), namely, that when anthrax attacks the central or upper portions of the face, and is attended with the objective symptoms above described, it is generally, perhaps always, accompanied by thrombosis and phlebitis of the ophthalmic vein and cavernous sinus, as well as of the venous twigs with which it is directly connected. I may here with propriety remark that I have not yet found on record a case of facial anthrax, presenting the objective phenomena above described, wherein the ophthalmic veins and cavernous sinuses proved to be free from thrombosis and phlebitis, if they were subjected to examination after death.

The following very brief account of some cases will serve to illustrate my meaning:—

Prof. Billroth (*Gen. Surg. Pathology and Therap.*, Hackley's trans., p. 263), relates a case of anthrax following a sword-cut on left side of head, that had healed.

CASE XXVIII.—One morning the young man awakened with considerable pain in the cicatrix, and a feeling of general illness; a rosy redness and moderate swelling of the scalp rendered an attack of simple erysipelas capitis probable. But the fever increased in an unusual manner, without the redness spreading over the head. He got a chill and became delirious. On the third day Billroth found a number of small white spots in the vicinity of the cicatrix, which showed the inflammation to be carbunculous; patient then entirely unconscious. Next day he died.

Autopsy.—Various small white gangrenous spots in the inflamed cicatrix of scalp; neighbouring veins plugged with clots, and along them the cellular tissue was swollen and contained points of pus. This condition of the veins was traced as far as the left orbit, but no further, as it was desirable to not mutilate the eye. On removing the brain, a moderately inflamed spot, about as large as a dollar, was found in the left anterior cranial fossa; the disease affected both the dura and pia mater and even entered the brain-substance.

Comments.—There is no doubt that the thrombosis and inflammatory process starting from the anthrax of the scalp, in this young man's case, had travelled along the venous canals to the left orbit; and, in view of what has been found above in strictly analogous cases, I believe that if the ophthalmic vein and cavernous sinus had been examined at the autopsy, they also would have been found filled with softening thrombi, and inflamed.

Again, Prof. Verneuil (*Gaz. Hebd.*, 1868, pp. 724–726) relates *six* cases of carbunculous inflammation of the lips which he had seen prove fatal, and remarks concerning them: "I have to reproach myself with not having sufficiently looked for facial phlebitis, but its frequency has been placed beyond doubt by anterior observations." The writer has read these cases with considerable care, and finds that they belong to the same category as those related above. Moreover, it does not appear that the condition of the ophthalmic veins and cavernous sinuses was inquired into in any of them; and it is not improbable that these vessels were thrombosed and inflamed, as they were found to be in all the foregoing cases when their examination was not neglected at the autopsy. If these cases were recited here, they would be numbered from XXIX. to XXXIV. inclusive. They really constitute, however, a part of the groundwork of this essay, and, therefore, require this mention here.

The following case bears a strong resemblance to Cases XXII. and XXIV., and is presented in order to illustrate still further the symptoms and course of this deadly disease:—

CASE XXXV.—Dr. Conant, of New York (*N. Y. Med. Journ.*, 1865, vol. ii., pp. 158, 366–370, 439–442), aged 40, was attacked with a small furuncle on right side of nose Sept. 30, 1865. It was freely incised. On Oct. 1, he complained of headache, of feeling very miserable and very languid. A poultice was applied.

On Oct. 2, the carbuncular disease was rapidly extending upward to the orbit. It was again freely incised. Pulse 108. Quinia and stimulants were administered. During the next three days his condition improved somewhat, and his pulse came down to 80 or 85. On Oct. 6, however, much soft quaggy swelling appeared around the right orbit, and in the evening exophthalmos was present. On the 7th he was much worse; exophthalmos much increased, and eyelids with surrounding parts greatly swelled; sight of eye gone; pulse 130 to 140; respiration frequent, irregular, and moaning. Three incisions into the orbit were made in the evening, without obtaining pus. On the 8th he was delirious, much prostrated, and died about 8 P. M.

Autopsy.—Cellular tissue of orbit spongy and infiltrated chiefly with blood; but little pus present. Eye not examined. Meninges inflamed on anterior half of right cerebral hemisphere, and arachnoid bathed in pus. Purulent exudation very abundant in middle fossa of skull, and was found between the dura mater and the bone as well as on the parietal arachnoid. In addition, numerous ecchymotic spots or extravasations were found scattered over the brain.

Comments.—Death in this case occurred on the tenth day. The ophthalmic vein, and the cavernous and other sinuses of the dura mater do not appear to have been examined at the autopsy; but in view of the remarkable likeness which the objective phenomena of this case present to those belonging to most of the foregoing cases, in view also of the inflammatory lesion exhibited by the meninges, especially at the base of the brain, is there any good reason to doubt that if these vessels had been examined they would have been found to be the seat of thrombosis and phlebitis, and that through them the inflammatory process passed inward to the membranes of the brain? However, be this as it may, the symptoms of this dreadful disorder are very clearly and succinctly set forth above.

Prof. Billroth (*op. cit.*, p. 362) relates another case in which anthrax attacked the lower lip.

CASE XXXVI.—A young, strong, healthy man. On the third day his face was greatly swollen, he had a severe chill, and was quite delirious. The lip was dark bluish-red, with numerous white gangrenous patches in the skin. He soon fell into a deep stupor, and died in four days from the commencement. An autopsy was refused. But I infer from the prominence of the cerebral symptoms, and from the post-mortem lesions which have been found in similar cases, that in this instance too there were thrombosis and phlebitis of the ophthalmic veins and cavernous sinuses.

Now, although facial anthrax is not the chief topic of this essay, the great importance of this disease makes it advisable for us to say in this place, that when it attacks the lower part of the face, for example the lower lip, it not unfrequently produces thrombosis and phlebitis of the facial vein, which spread downwards to the veins of the neck, rather than upwards to the ophthalmic veins and the sinuses of the dura mater. The following is in point.

CASE XXXVII.—Dr. Reverdin (*Archiv. Gén. de Méd.*, 1870, vol. i. pp. 652–657) relates the case of a woman, aged 24, who entered the Hôpital Necker, March 29, 1869, with anthrax of the lower lip, near the right commissure. She sank and died April 2.

Autopsy.—The sinuses of the dura mater contained only some ordinary cruoric clots. The veins of face, on right side, were extensively thrombosed and inflamed. External jugular similarly affected. Numerous metastatic abscesses in the lungs, and one in one kidney. Spleen soft, almost diffluent, but with-

out abscesses. The thrombosis or phlebitis began in some branches of the facial vein, connected with the anthrax of the lower lip. It spread upwards to the angle of the eye, but did not go as far as the cavernous sinus; also backwards by the transverse veins of the face to the external jugular, blocking it up extensively, and thence, by an anastomosing branch, to the internal jugular, affecting it, however, but slightly. Prof. F. Weber (*Schmidt's Jahrb.*, B. 110, pp. 304, 305) has published one analogous case, and mentioned several others that had fallen under his own observation at Kiel.

A brief sketch of the next three cases, in which carbuncles of the face and lips proved fatal, is here presented in order to secure completeness of description. They were observed by Regimental Surgeon Guttenberg, in the Baden Military Hospitals (*Cannstatt's Jahrb.*, B. 4, 1865, p. 113).

CASE XXXVIII.—This patient had a carbuncle on the left upper lip. He died after a few days with pyæmic symptoms, and on *autopsy* puriform matter was found in the left facial vein with numerous small abscesses in the lungs and spleen.

CASE XXXIX.—This patient had a carbuncle on the left cheek, with œdema of the eyelids and erysipelas of the nose, and died of metastatic pleurisy two days after the beginning of the sickness.

CASE XL.—This patient had a carbuncle in the neighbourhood of the left angle of the mouth, to which metastatic pneumonia and pleurisy were added. From the right ankle up to the knee there was also lymphangitis. On *autopsy* the left facial vein was found to contain a loose fibrinous coagulum, and the diagnosis of so-called metastatic pneumonia and pleurisy was also confirmed.

Again, Prof. Güntner, of Saltzburg (*Schmidt's Jahrb.*, B. 114, pp. 42–44), has met in his experience with five cases in which furunculoid or carbunculoid inflammation of the face occurred (Cases XLI. to XLV., inclusive). The patients were a young woman, aged 19, a farmer, aged 57, a landlord, aged 59, an office-holder's wife, aged 43, and a hatter's wife, aged 45. The first two were attacked in the winter, the last three in the spring. Three died and two recovered. In all the disease started in the upper lip. Taking cold while perspiring appeared to be the exciting cause. The attacks began with strong rigors (repeated in two cases), followed by intense fever; in two cases there were also nausea and vomiting. The disease reached its height about the tenth day, and in the fatal cases death occurred between the fourteenth and sixteenth. The phenomena were those of carbuncle of the upper lip, with diffuse œdematous inflammation extending over the whole of the face, the temples, and the submaxillary region. In the favourable cases the fever remitted, the œdematous swelling subsided, the tumour became more circumscribed, and either suppurated freely, or underwent resolution, in the course of three or four weeks. In the unfavourable cases the swelling spread over the whole head and neck, the conjunctiva became chemosed, the fever more intense, restlessness and delirium ensued, with sudden loss of consciousness, dilatation and insensibility of pupils; gradually general relaxation followed, sopor and death. In the only autopsy that was made, the pia mater was œdematous, the ventricles expanded and filled with yellowish serum, the brain-substance congested, the cerebral sinuses, with the jugular veins, contained dark-red coagula, and the superficial veins of left side of face were also stopped up by coagula; the lungs were œdematous with some deposits of the size of a nut in the left. Güntner holds that in the above cases the real cause of death was cerebral thrombosis and phlebitis, which had their starting-point in the facial vein, and were propagated thence along the ophthalmic vein to the cavernous and other sinuses at the base of the brain. He also holds that the short stiff connective tissue of the lips, nose, septum narium, etc., specially favours the early occurrence of thrombosis of the larger veins, which is the first step to the ensuing phlebitis. He lays great stress on this point as explaining the exceptional importance of anthrax when seated in the upper lip, etc. This explanation must, however, be accepted

(if at all) *cum grano salis;* for operations on, and wounds of, the lips, nose, forehead, and other parts of the face are not particularly liable, nor even apt to be followed by thrombosis, phlebitis, and pyæmia.

Furunculoid and carbunculoid inflammation or anthrax of the face is a very fatal disease. Out of twenty-eight cases mentioned above, but two recovered. In fifteen cases Mr. Paget saw but one get well (*Lancet*, Jan. 16, 1869). Prof. Verneuil (*Gaz. Hebd.*, 1868, p. 724) says: "My personal experience bears me out in declaring that anthrax of the lips, in particular, is a malady of terrible gravity. Thus far I have seen all die who were affected with it, and that, too, in spite of a very active local and general treatment. . . . . I know of only one exception to this sad rule." It is the following:—

CASE XLVI.—A distinguished practitioner of Paris, after many days of great fatigue, was suddenly attacked with a swelling of the upper lip, accompanied by a formidable train of general symptoms, such as restlessness, delirium, intense fever, etc. A few hours afterwards, by good fortune, he secured the services of Robert, who scarified the lip, and prescribed appropriate general treatment. Nevertheless, the anthrax developed itself, and, during many days, inspired the utmost solicitude. This patient recovered.

CASE XLVII.—Dr. Dubreuil (*Gaz. Hebd.*, 1863, pp. 764, 765) relates a case of multiple furunculoid of the face which ended in recovery. The patient was a man, aged 58, brought to the Hôtel-Dieu, October 25th, 1863, by the police. Besides the furuncles themselves, he had thrombosis and phlebitis of the right fronto-parietal and ophthalmic veins, exophthalmos from abscess of the right orbit, and an abscess on the right temple.

CASE XLVIII.—Dr. Reverdin (*Archiv. Gén. de Méd.*, 1870, vol. ii. pp. 148–152) also relates the case of a woman, aged 22, who entered the Hôpital Necker, April 21, 1869, with anthrax of the lower lip. Thrombosis and phlebitis of the veins of her face, with very threatening general symptoms, followed, but in the end she recovered.

The foregoing clinical observations fully authorize us to conclude, *firstly*, that furunculoid and carbunculoid inflammation, or anthrax of the face, is one of the most deadly of all surgical diseases, for, out of a grand total of forty-five cases (including Mr. Paget's) that are referred to, only five recovered; *secondly*, that the great fatality of this disease results mainly from the occurrence of thrombosis and secondary phlebitis in the veins connected with the anthrax, and their subsequent propagation to the ophthalmic veins, and through them to the cavernous and other sinuses at the base of the skull; and, *thirdly*, that a plan of treatment, in order to prove successful, should have for its object either the prevention of the thrombosis itself, or its limitation to the veins directly connected with the anthrax. The last-named topic we shall take up again and appropriately discuss in another place.

3. We have next to mention a third species of inflammatory thrombosis of the cerebral sinuses. In occasional instances ulceration of the mucous membrane of the nose is attended with erysipelas of the face, and gives rise to thrombosis and secondary phlebitis of the frontal and ophthalmic veins, and of the cavernous and circular sinuses, as, for example, it did in the following:—

CASE XLIX.—Dr. Blachez (*Gaz. Hebd.*, 1863, pp. 717, 718) relates the case of a soldier, aged 43, who entered the Gros-Caillou Hospital, under Dr. Gérier, July 16, 1863. He had been ill for several days with fever, redness, and slight swelling of the forehead; the symptoms were attributed to erysipelas. On admission he was found to be delirious; skin on both sides of nose, eyelids, and

forehead red and swollen, and the swelling also extended under the hair; eyelids œdematous and separable only far enough to show chemosis. Redness not uniform, but occurring in patches of a slightly livid hue along the fronto-temporal veins, which appeared as prominent, hard, violet-coloured cords. In the afternoon the delirium increased, and in the evening it became necessary to apply the straight-jacket. The pulse grew small and irregular; coma followed, and death at 2 A. M.

Autopsy.—Bluish-livid marblings on upper part of face. Conjunctivæ œdematous, with double chemosis, manifestly greater on right side. An ulcer, about the size of a franc piece, was found on the pituitary membrane in the front part of right nasal fossa. Another ulcer, exactly similar, occupied the other side of the septum narium. Each ulcer was perfectly limited. The thrombosis and secondary phlebitis were traced to them as the starting-point. The principal branch of the frontal vein was the seat of intense inflammation, characterized by thickening of its walls and adhesion to the surrounding connective tissue, and by containing a purulent cylinder. The neighbouring branches were also inflamed, and contained either pus, or a mixture of pus and clotted blood. The ophthalmic vein was full of puriform matter. The cellular-tissue of orbit was strongly infiltrated. The cavernous and circular sinuses also were full of puriform matter. Their lining membrane was coloured dark-red, and tomentose. The brain and its membranes were not inflamed nor softened. The right internal jugular vein was, for a short distance, occupied by a soft, reddish, non-adherent clot. The thoracic viscera exhibited the principal lesions of purulent infection; both lungs adhered by means of yellowish, soft, false membranes; some pus in right pleural cavity; numerous metastic abscesses in the pulmonary substance. Liver, kidneys, and spleen perfectly sound.

4. Erysipelas of the face or head sometimes occasions insensibility and rapid death by inducing thrombosis and secondary phlebitis of the sinuses of the dura mater, as, for example, it did in one instance related by Trüde (*Schmidt's Jahrb.*, B. 110, p. 303) and already referred to above, which we shall again mention here.

CASE L.—A maid-servant, aged 26, was brought to the Friedrich's Hospital, Oct. 10th, 1859, with erysipelas of the face, presenting the usual phenomena, which commenced eight days before with redness and swelling of the right eye and the parts about it. On admission her general condition was pretty good; pulse 120; skin very hot. Afterwards she rapidly grew worse. The eyelids, especially on the right side, became more swollen, the conjunctiva chemosed, the eye protuberant, and low delirium, with stupor and involuntary discharges, soon followed; death on the second morning after admission. On *autopsy* there were found thrombosis and phlebitis of the facial and ophthalmic veins, and of the cavernous and transverse sinuses, as well as lobular pneumonia of both lungs, and one abscess in right lung.

CASE LI.—Dr. Wilks (*Guy's Hospital Reports*, 1861, p. 169) also relates a case in which erysipelas of the face was attended with orbital abscess, thrombosis of the ophthalmic vein, and cavernous sinus, etc.: A woman, aged 21, was sent to hospital for erysipelas. Her face was red and swollen, especially about the eyes, which were acutely inflamed. It soon became evident that the globe was suppurating, and from the subsequent cerebral symptoms, that the inflammation had extended to the brain. She died on the sixth day after admission. *Autopsy.* The integument was infiltrated with pus, and the tissues around the eyeball were suppurating. The ophthalmic vein contained matter, which extended into the cavernous sinus. The inflammation also extended to the contiguous parts. Thus there was acute meningitis of the surface of the brain; the arachnoid itself was covered with lymph, and also the external surface of the dura mater, which rendered it slightly adherent to the cranium. The left lung contained a few small abscesses, and the surface was covered with patches of lymph; the right lung had more recent lobular pneumonia.

5. Injury of the skull, when followed by caries of the bone and inflammation of the surrounding parts, not unfrequently induces thrombosis of the corresponding sinuses of the dura mater. Prof. Von Dusch relates two cases belonging to this category. (*Op. cit.*, pp. 93, 94.) The first was that of a man, aged 42, whose right parietal bone was injured by a sabre-cut. The other was that of a soldier, aged 22, whose right parietal bone was wounded by a gunshot. In both there was purulent meningitis, with effusion into the ventricles, and metastatic abscesses in the lungs. In the first there was thrombosis of the cerebral veins as well as of the superior longitudinal and lateral sinuses. In the last the superior longitudinal sinus alone appears to have been thrombosed.

CASE LII.—Dr. Wilks (*Guy's Hospital Reports*, 1861, pp. 150, 151) relates the following case, in which injury of the head was followed by suppurative inflammation, with caries of the skull, and thrombosis of the superior longitudinal sinus: A man, aged 33, fell from a height, receiving a scalp-wound and injury of abdomen, followed by peritonitis. Cerebral symptoms appearing, he was trephined, but without benefit, and he gradually sank. *Autopsy.* Purulent matter beneath the scalp; bone carious; dura mater involved on both under and upper surfaces. The superior longitudinal sinus contained a softening clot. Lungs full of abscesses, and many of them covered with lymph. The abdomen showed a local peritonitis, arising from a laceration of the liver, which was undergoing repair.

6. Injury of the skull, even when not followed by caries of the bone, sometimes leads to thrombosis of the sinuses, especially in cases where the neighbouring parts become inflamed and suppurate. Dusch (*op. cit.*, pp. 94, 95) relates two cases of this sort. The first occurred in the person of a soldier, aged 21, who was wounded by a grenade in the right parietal bone; the other in a man, aged 54, who suffered an injury of the occiput, which made a wound that suppurated slightly.

7. Suppurating wounds of the scalp unattended with injury of the bone occasionally induce thrombosis of the sinuses of the dura mater. Dusch (*op. cit.*, pp. 95, 96) relates the case of a man who had a cicatrizing scalp-wound; rigors suddenly supervened; the edges of the wound assumed an erysipelatous appearance, and the periosteum was seen to be detached from the bone. Death occurred eight days after these symptoms began. On *autopsy* there were found adhesive meningitis, puriform thrombosis of superior longitudinal sinus, circumscribed purulent pleurisy and peritonitis, and numerous abscesses in the liver.

8. Suppurating diseases of the hairy scalp, such, for example, as eczema, etc., sometimes produce thrombosis of the cerebral sinuses. Dusch (*op. cit.*, pp. 96, 97) relates two cases of this kind. The first occurred in a scrofulous girl, aged 2 years, who had a sore on the right occiput. Convulsions and cerebral symptoms supervened, and she sank and died. *Autopsy.* The lateral sinus was distended with stinking pus which contained small hard clots of blood, and there was purulent meningitis. The second also occurred in a girl, of 2 years, who had freely suppurating eczema of the hairy scalp. The discharge suddenly decreased, cerebral symptoms refer-

able to the left hemisphere appeared, and terminated in death. *Autopsy.* Extravasated blood was found beneath the arachnoid on the left hemisphere. There was puriform thrombosis of the superior longitudinal sinus, with stiff coagula filling the veins which empty into it.

9. Abscesses occurring in various parts exterior to the skull have given rise to thrombosis of the sinuses of the dura mater. For example, Dusch (*op. cit.*, pp. 97, 98) quotes a case from Castelnau and Ducrost, in which idiopathic abscess of the orbit was the starting point for puriform thrombosis of the ophthalmic vein, the cavernous, circular, petrosal, and lateral sinuses, etc.; also, another case from Virchow, in which suppurating parotitis, consequent upon double pneumonia, with extensive disorganization and purulent infiltration of the tissues around the right parotid gland, the temples, the neck, and lower jaw, was followed by thrombosis of certain veins of the dura mater, and of the superior longitudinal, lateral, and cavernous sinuses, as well as the jugular veins, etc. The following cases of orbital abscess belong to the same category, and proved quickly fatal:—

CASE LIII.—Dr. Wilks (*Guy's Hospital Reports*, 1861, p. 169) relates a case in which ocular and orbital suppuration was followed by thombosis of the cavernous and other sinuses of the dura mater, etc. A young man, aged 20, was taken, four days before death, with shivering which he styled a cold, and at the same time the right eye was inflamed. This soon advanced to suppuration. When admitted to the eye-ward, suppuration of the eyeball and orbit already existed. He sank rapidly, there being little doubt that the disease had extended inwards as phlebitis. There was no history of injury. *Autopsy.* Although the body was yet warm, the staining of the veins on the surface had already commenced. There was suppuration in and around the right eyeball which had extended to the cavernous sinus. This vessel contained a softening clot of blood and pus, which also extended into the other sinuses of the dura mater. Brain itself unaffected. Lungs showed lobular congestion, but no acual pneumonia. Heart covered with purpurous spots. Liver also had patches of a dark colour on its surface. Spleen very soft.

CASE LIV.—Dr. Wilks (*Ibid.* p. 168) relates another case in which thrombosis followed an abscess of the left orbit: A man, aged 22, came to the hospital with suppuration of the left eyeball and exceedingly ill. He was delirious and unable to give any account of himself, but his friends thought he had not been injured. He was, however, employed among horses. He got rapidly worse; swelling and suppuration of the joints came on, and subsequently he had very fetid expectoration. The symptoms of pyæmia were well marked from the beginning; and thus there was but little doubt that the disease proved fatal by travelling backward along the ophthalmic vein and cavernous sinus. *Autopsy.* The left orbit was suppurating, the globe itself disorganized, and the left side of neck and face inflamed. The left cavernous sinus was full of matter, but the larger sinuses and the jugular vein were unaffected. The upper surface of brain was covered with dirty looking purulent fluid; and the left anterior lobe was in a state of softening. Both lungs were filled with abscesses and sloughy cavities, that were covered with lymph; bronchiæ inflamed and full of mucus; cellular tissue around larynx infiltrated with pus; liver had numerous small red patches, as if there were lobular hepatitis in an early stage.

10. Finally, purulent meningitis may lead to thrombosis of the veins of the pia mater, and of the superior longitudinal and other sinuses of the dura mater. Hasse (*Patholog. Anat.*, p. 40, Am. ed.) has himself observed

two cases of this sort, and mentions one seen by Gendrin, and another by Ribes.

This completes what we have to say concerning the clinical history and relations of the traumatic and inflammatory varieties of thrombosis of the cerebral veins and sinuses of the dura mater.

53 SOUTH WASHINGTON SQUARE, August 1, 1873.

ART. IV.—*An Endeavour to show that Insufficiency of the Internal Recti Muscles and Myopia have been erroneously associated; and that the Muscular Asthenopia of Myopia is not the result of such Insufficiency, but of the Anomaly of Refraction.* By SAMUEL THEOBALD, M.D., Ophthalmic and Aural Surgeon of the Eye and Ear Dispensary, Baltimore.

EXAMINED by means of the usual tests, which are employed for the detection of insufficiency of the internal recti muscles, there are but few cases of myopia which will not furnish the conditions considered sufficient to demonstrate the existence of this affection. Hence it is that, as the accuracy of these tests has been very generally accepted, insufficiency of the internal recti muscles has come to be looked upon as the rule, rather than the exception, in myopia; a recent writer upon this subject,[1] stating that it exists in, perhaps, nine-tenths of all the cases of progressive myopia; while the same writer quotes Giraud Teulon as saying, that he regards the existence of staphyloma posticum "rather as an evidence of the insufficiency than of the myopia."

First, then, let us inquire what are the tests relied upon. There are two which are usually employed. In the first and less accurate one, the subject of the examination is directed to regard an object held in the median line at a short distance from the eyes (8″ or 10″). One eye is then excluded from vision by the hand, or by a screen placed before it, and the movement which it makes upon such exclusion is noted. If it is found to rotate outwards, while the uncovered eye continues in its former position, so that, when the hand is removed, a movement of convergence is required in order to restore binocular vision, weakness or insufficiency of the internal recti is assumed.

The second test, which is more relied upon, and is based upon the inability of the eyes to overcome vertical diplopia, was devised by Von Graefe. A black dot, with a fine line passing vertically through it, is drawn

[1] Dr. R. H. Derby, of New York, in an article upon Progressive Myopia and its Operative Cure, in the N. Y. Medical Journal, June, 1873.

upon paper, and being placed in the median line, at a distance of 8″ or 10″, the patient is directed to regard it while a prism of 10° or 12° is held, with its base directed either upwards or downwards before one eye. As the result of the action of the prism, held in this manner, vertical diplopia is produced. Two dots, one situated above the other, are seen. If the dots are found to stand in the same vertical line, the balance of power between the external and internal recti is considered to be normal. If, however, the dots exhibit a lateral as well as a vertical deviation, and if this lateral deviation is crossed—that is, if the right eye sees the dot which stands to the left, and *vice versa*, then, as this evinces relative divergence of the optic axes, the existence of insufficiency of the internal recti is considered to be established; and the weakest prism which, held before one eye, with its base inwards, corrects the lateral separation of the dots, and makes them stand one directly above the other, is considered as the index of the degree of the insufficiency for the distance at which the test is made. A candle flame is then, usually, substituted for the dot and line, and being placed 10′ or 15′ from the patient, the trial is repeated in order to discover if, even at that distance, insufficiency still exists.

Let us now consider the accuracy of these tests. They have been almost universally adopted; but are they, indeed, reliable? *Except in cases of emmetropia*, that is, where no anomaly of refraction exists, I unhesitatingly answer *no*. If hypermetropia be present they demonstrate an excess of power in the internal recti muscles, which is not real; whereas *in myopia they exhibit an insufficiency in these same muscles, which is only apparent.* I shall endeavour, successfully, I hope, to sustain this assertion.

There is a condition which exists alike in myopia and in hypermetropia, and which, I think, is competent to explain most of the muscular disturbances that occur in these forms of ametropia; and to explain them in accordance with a common principle, the significance of which, I am persuaded, has not been fully appreciated. That condition consists in the disturbance of the parallelism which, in the emmetropic eye, exists between accommodation and convergence.

The ciliary muscles and the internal recti receive their supply of motor nerves from a common origin, the third pair. The latter muscles have two modes of action. They may act in conjunction, producing convergence of the optic axes; or each internal rectus may, in connection with the external rectus of the opposite eye, produce the lateral movements of the eyes, which are important in enlarging the visual field. In the latter case their action is independent of the accommodation. Between the concomitant action, however, of the internal recti muscles, producing convergence, and the action of the ciliary muscles in accommodation, there exists such an interdependence, such a oneness of nervous influence, that it is impossible, except by an exhausting effort, and then only to a relatively slight

extent, for them to take place independently of each other. The same mandate of the will, which commands an effort of convergence to be made, unconsciously directs a like effort of accommodation; so that there necessarily exists a constant parallelism between the amount of work which the ciliary muscles and the internal recti, together, perform.

Thus when an emmetropic individual views distant objects, with parallel optic axes and relaxed accommodation, his convergence and accommodation are, alike, $= 0$. When he regards an object at 10″, and converges for that distance, his accommodation $= \frac{1}{10}$; *i. e.*, his ciliary muscles have exerted sufficient force to increase the convexity of the lenses to such an extent as to augment their refractive power to an amount equivalent to the action of a lens of 10″ focal length. If he converges for a nearer point, 3″ or 4″, his accommodation increases proportionately, becoming $\frac{1}{3}$ or $\frac{1}{4}$.

So long, then, as this normal parallelism maintains, convergence and accommodation may be indefinitely prolonged without effort or fatigue. When, however, this is disturbed; when the ciliary muscles are compelled to perform more work than should correspond with the work, at the same time, performed by the internal recti, or *vice versa*, a manifest effort is required, where none before was necessary; and, as a result of this, fatigue of the eyes or asthenopia is superinduced.

In myopia, and in hypermetropia exactly such disturbance of the parallelism between convergence and accommodation as this necessarily exists. In hypermetropia, in order to overcome the error of refraction, the ciliary muscles are obliged to perform more work than the internal recti. Asthenopia results, and in many cases, in order to relieve this, the internal recti are allowed to perform an amount of labour equal to that of the ciliary muscles; convergent squint being the result. To illustrate this, let us suppose a case of hypermetropia $= \frac{1}{8}$. The subject of it wishes to read at a distance of 8″. To do this his accommodation must $= \frac{1}{8}$, while his convergence must be not for 4″, but for 8″. Asthenopia ensues, and will persist, unless he is willing to sacrifice binocular vision, and converge for 4″, while his eyes are accommodated for a distance of 8″ only.

For this explanation of the asthenopia of hypermetropia, and of the connection between hypermetropia and *convergent* strabismus, we are indebted to Donders. He does not, however, seem to have considered the same reasoning as applicable to the asthenopia and the *divergent* strabismus of myopia; but, on the contrary, he considers the latter as due, mainly, to the peculiar ovoid form of the myopic eye, and to the smallness of the angle formed by the optic axis and visual line; conditions which, for mechanical reasons, render convergence difficult;[1] while, in connection with the former, he assumes "a true insufficiency of the musculi

[1] Accommodation and Refraction of the Eye, Donders, p. 403.

recti interni." Speaking of asthenopia muscularis in connection with myopia, he says:—

"Cases have occurred to me, in which there was at first vision [in near work] with both eyes, but where, on fatigue, the one eye gave way, and the work was then attended with less difficulty; others where precisely that giving way caused trouble and was complained of. This latter state I met with when the degree of the myopia was comparatively slight, and where, therefore, besides resistance of the eye, a certain weakness of the muscles (not only insufficiency of movement, but true *insufficiency of the musculi recti interni*, must be understood); a condition which, in moderate degrees of myopia, I have found to be hereditary, with the phenomena just described."

This assumption of Donders, together with the test of Von Graefe, which I have described, are chiefly responsible for the generally adopted belief in the association of insufficiency of the internal recti muscles with myopia. To account, however, for the symptoms, which Donders has described, no such assumption is necessary. They are, indeed, exactly such as we should anticipate from the disturbed relation between convergence and accommodation, which, as I have before stated, exists in myopia as well as in hypermetropia. In hypermetropia, accommodation is in excess of convergence. When the eyes are used, especially for near work, asthenopia ensues; the ciliary muscles soon become tired and give way, and the sight grows indistinct. A convergent squint, by neutralizing the excess, may do away with these symptoms. In myopia, convergence is in excess of accommodation. Asthenopia, attended by giving way of the internal recti, is the result. As, in hypermetropia, there is no actual weakness of the ciliary muscles, so, in myopia, there is no real insufficiency of the internal recti. It is, in each case, the muscles which work in excess, that evince such signs, and, as in the former condition an effort is made to neutralize this excess by a convergent squint, so, in the latter is it accomplished by a divergent squint. There is this difference, however, between the two. In hypermetropia, as there is excessive action of the ciliary muscles, the parallelism is restored by excessive action upon the part of the internal recti; the repeated efforts of the ciliary muscles to do so, by relaxing their tension, being incompatible with useful vision. In myopia, on the contrary, as there is diminished action of the ciliary muscles, it is restored by diminished action upon the part of the internal recti; its restoration by increased action of the former being of course impossible, although, as is well known, the ciliary muscles do act unnecessarily, and even to the detriment of vision, in myopia, causing the binocular far point to lie nearer the eyes than the monocular. This view of the origin of divergent strabismus affords us a most satisfactory explanation of the fact of *relative divergent* strabismus being so much more common than *relative convergent* strabismus. In hypermetropia accommodation is *always* in excess of convergence, not only for near work, but for *distant vision* as well; therefore absolute soon follows upon relative convergent squint. In myopia, on the contrary, convergence is in excess of accommodation

during near vision only, hence relative divergent squint is much more frequently met with, in connection with myopia, than absolute. There are, however, exceptions to this rule. In the higher degrees of myopia, owing to the slight or even negative value of the angle formed by the optic axis and visual line, actual *convergence of the optic axes* becomes necessary in maintaining binocular vision even *for a distance*. Here then we have the conditions for the production of *absolute divergent* strabismus; and it is, indeed, in connection with such high degree of myopia that we find it occurring.

Let us now recur to the tests, the accuracy of which I have impugned, and in order to understand fully their significance, let us ask why a correcting squint does not occur in every case of myopia and hypermetropia, if it is possible thereby to eliminate the attending asthenopia by restoring to their normal parallelism convergence and accommodation? It is because such a squint is, in its inception, necessarily attended by diplopia or double vision; a condition which, in the majority of cases, is even more intolerable than the asthenopia which it would supplant. Eliminate this tendency to prevent diplopia, and the correcting squint at once takes place. The tests which we are considering accomplish this elimination; the first by excluding one eye from vision; the second by producing vertical diplopia, which it is impossible for the eyes to overcome, and which, owing to the character of the test object used, is generally accompanied by an indifference to lateral diplopia as well. Hence it is that I have pronounced them unreliable when myopia or hypermetropia is present. In the former condition the divergence of the optic axes which takes place when either of these tests is applied, and which has been looked upon as proof of the existence of insufficiency of the internal recti, represents, unless it exceed certain limits, merely the ever present, but for the moment unrestrained desire, to exact as little work of the internal recti as is, at the same time, required of the ciliary muscles.

The amount of this apparent insufficiency, which will vary with the degree of the myopia, and the distance at which the test objects are viewed, may be approximatively ascertained for any particular case if these and the width between the centres of the pupils be given. Thus if we assume with myopia $\frac{1}{8}$ a width of 64 mm. between the centres of the pupils, the test object to be held at 8″, accommodation would = 0; and if the parallelism be restored, convergence would also be *nil*, *i. e.*, it would be the same as for distance. We have only then to ascertain, by means of a protractor, the angle of convergence at which the visual lines would meet at 8″; which we should find to be 18°, and subtract from this the value of the angle at which they would meet after parallelism between accommodation and convergence had been restored, which in this case is practically 0, to know the degree of the apparent insufficiency 18°. Or, again, if we assume with the same interocular width, myopia $\frac{1}{12}$ the test to be for

8″, as before; accommodation would $=\frac{1}{8} - \frac{1}{12} = \frac{1}{24}$. Parallelism would be restored by convergence for 24″. The protractor shows that this would take place under an angle of 6°. Subtract this from the 18° which we have already ascertained as the angle of convergence for 8″, and we have the apparent insufficiency for this distance 12°.

Practically, however, owing to the habit which in myopia has been long acquired of compelling the internal recti to work in excess of the ciliary muscles, the value which we should thus obtain would probably be somewhat greater than we should find upon resorting to the dot and prism test. If, on the other hand, the degree of the apparent insufficiency, as shown by the test, is greater than the amount which we have ascertained by calculation, then we must assume that the difference between them represents either an actual insufficiency of the internal recti muscles, or, more probably, a difficulty of convergence of the visual lines due, as Donders has pointed out, to the peculiar conformation of the myopic eye. In proof of the foregoing the results of the following experiments which have been made with the view of substantiating the statements which I have advanced, and of proving the accuracy of Von Graefe's test, are submitted.

I am myself myopic, having in each eye myopia $\frac{1}{18}$. I find that, when regarding a candle flame 20′ distant, either with or without correction of the error of refraction, I am able to overcome by a forced convergence a prism of 70°,[1] base outwards. When regarding a vertical line at the distance of 8″ I can overcome one of 64°, and after correcting my myopia one of 70°. This would certainly seem to indicate that there is no actual insufficiency of the internal recti muscles; and yet, according to Von Graefe's test, such insufficiency does exist, because I find, at a distance of 8″, lateral crossed, as well as vertical separation of the dots. A prism of 12°, base inwards, corrects the lateral separation. If, however, I neutralize the error of refraction, which exists in my eyes, with $-\frac{1}{18}$ glasses, and then submit them to the test, the lateral separation of the dots does not take place, and there is no longer any indication of insufficiency of the interni. Why? Because I have, by this means, restored the parallelism between accommodation and convergence, the disturbance of which was the cause of the apparent insufficiency. The ciliary muscles must now, in order to overcome the effect of the concave glasses, perform an amount of work equivalent to that done by the internal recti. For a convergence of 8″ accommodation now $=\frac{1}{8}$, whereas before it amounted to $\frac{1}{18}$ only. If, instead of merely correcting the myopia, I more than neutralize

[1] This represents the combined strength of the eleven prisms which are contained in my (Nachet's) case of trial glasses. After one or two trials with several of the stronger ones combined, I was able to overcome all of them placed with their bases corresponding, and could have accomplished still more if my supply of prisms had not become exhausted.

it by substituting for $-\frac{1}{18}$, $-\frac{1}{8}$, and thus produce artificial hypermetropia, I then bring about that condition of things which exists in real hypermetropia. The ciliary muscles are compelled to perform more work than the internal recti; and now the test demonstrates an apparent excess of power in the internal recti; for there is homonymous lateral separation of the dots, showing relative convergent squint. If, instead of the concave I substitute convex glasses, then as the disproportion between accommodation and convergence is increased, a greater degree of apparent insufficiency of the interni is shown by a wider separation of the dots. When, however, I place before one eye a concave glass, which more than neutralizes the myopia, and before the other a convex glass, which serves to increase it, the most striking result is obtained. It is impossible, under such circumstances, to see both dots distinctly at the same moment. In order to see one excessive accommodation is necessary; to see the other accommodation must be completely relaxed. With excessive accommodation, that is, when the object is regarded with the eye before which the concave glass is placed, there is lateral homonymous separation of the dots; as accommodation is relaxed, so that the other eye may be able to see distinctly, the dots are seen to change their position; and, now, crossed diplopia occurs instead of homonymous. Thus, by varying the tension of accommodation, we may exhibit, at will, apparent excess of power or apparent insufficiency of the internal recti.

In a report on the progress of ophthalmology[1] by Dr. B. Joy Jeffries, of Boston, I find mention of a case of "Seeming Perversion of the Law of Concomitant Squint in Certain Forms of Anisometropia," reported by Prof. Alfred Graefe, in which a condition exactly similar to that which I have just described existed, and was attended by precisely the same result as regards the action of the internal recti muscles. Myopia existed in one eye, hypermetropia in the other. Insufficiency of the internal recti muscles was stated to be present. "The covered myopic eye converged, the covered hyperopic eye diverged." What explanation the observer gave of the facts, or what conclusion he drew from them, is not stated.

We have now to consider this condition of disturbed parallelism between accommodation and convergence in myopia in its practical, and by far its most important aspect; namely, its influence upon the progress of myopia. Although I have endeavoured to show that true insufficiency of the internal recti and myopia have been erroneously associated, I am fully in accord, though differing as to its cause, with those who look upon difficulty of convergence of the visual lines in myopia as a most important factor in the development of this condition.

The effort which attends the unsupported action, so to speak, of the internal recti in myopia, when the eyes are used for near work, is soon

[1] Transactions of the American Ophthalmological Society for 1871, page 17.

followed, as has already been pointed out, by muscular asthenopia, attended by a state of irritation, and of congestion of the bloodvessels of the eye, which is only too well suited to the development of staphyloma posticum. The investigations of Donders, of Cohn, of Erismann, and of others, all go to show that the persistent use of the eyes for near work, as in reading and writing, furnishes the conditions most favourable to the production and increase of myopia; and it is under such circumstances that the disproportion between accommodation and convergence, being greatest, is capable of exerting, in the manner indicated, the most potent influence in promoting such increase.

The tendency of myopia, except in its higher degrees, to become stationary between the thirtieth and fortieth years of life, after a stage of temporary progression, most marked during youth, has been well established, but no satisfactory explanation of the fact has been advanced. As the result of his observations Donders has stated that, "In youth almost every myopia is progressive; *the increase is then often combined with symptoms of irritation.* This is the critical period for the myopic eye; if the myopia does not increase too much it may become stationary, and may even decrease in advanced age; if it is developed in a high degree it is subsequently difficult to set bounds to it."[1]

A moment's reflection will show us that the disturbed parallelism between convergence and accommodation in myopia will be favourably modified by the approach of presbyopia, *i. e.*, by the recession of the near point; and in such modification we have an explanation of the disappearance of the asthenopia which existed in earlier life, and of the gradual diminution and eventual arrest of the progress of the myopia itself.

The diminution of the power of accommodation, which when it has reached a certain stage constitutes presbyopia, and which commences in the earliest years of life, is the result, as Donders has pointed out, not of loss of power of the ciliary muscle, but of gradually increasing firmness of the crystalline lens; so that, though the former may be capable of exerting as much power as ever, it is incapable of producing the same amount of change in the conformation of the lens: which change is the essence of accommodation. As the result of this, it will be seen, that with the approach of presbyopia, the necessity which existed in youth of suppressing accommodation, and forcing the internal recti to work unsupported, gradually disappears, because now the effort of accommodation, which would correspond to a given effort of convergence, is attended by an amount of actual accommodation by no means equal to that which in youth would have been accomplished by it.

Thus, for example, a young person with myopia $\frac{1}{16}$ wishes to read at

[1] Op. cit. page 344. I have taken the liberty of italicizing a portion of the extract.

8″. The amount of accommodation, which corresponds with the convergence, which this would necessitate $=\frac{1}{8}$. He desires, however, owing to his myopia, only $\frac{1}{16}$, and is, therefore, compelled to suppress $\frac{1}{16}$. At fifty years of age, however, the amount of actual accommodation, which he is capable of exercising, is reduced to $\frac{1}{16}$, and he, therefore, requires the whole of it in order to enable him to see distinctly at 8″. There has been, from youth up, a gradual diminution of the amount which it was necessary for him to suppress, until now there is none remaining; and the parallelism between the *effort* of convergence and the *effort* of accommodation is at last complete. But, indeed, for the influence of the myopia, we would be presbyopic, and would require, in order to read at 8″, convex $\frac{1}{16}$ spectacles. The myopia serves the purpose of the convex glasses however, and presbyopia is, for a time, deferred.

If it be true that the disproportion between accommodation and convergence in myopia is capable, in the earlier years of life especially, of exerting so potent an influence in promoting its increase, it becomes important that in the treatment of progressive myopia our attention should be directed towards it, as a condition the elimination of which is of the greatest moment. Let us inquire in what way this elimination may be accomplished.

As, under such circumstances, convergence is in excess of accommodation, it is evident that, either by diminishing the extent of the former, while the latter remains constant, or by increasing the latter while the former is unchanged, equality between them may be restored. By means of prismatic glasses, we have it in our power to diminish the convergence to any desired extent; or we may increase accommodation and make it equal convergence by neutralizing the myopia by concave glasses. Practically, however, the latter plan is not available except in the slighter degrees of myopia; because the tension of accommodation which it necessitates is itself found to be productive of mischief. "When the myopia is slight in reference to the range of accommodation, and the eye is otherwise healthy," we may, nevertheless, resort to this method of correcting the disproportion, and thereby relieve the asthenopia, and favourably modify the progress of the myopia. We have the authority of Donders for saying that under such circumstances "neutralizing glasses may be worn as spectacles, and may be used even in reading and writing." "I think it is even desirable," he adds, "that this should be done. When persons with moderate degrees of myopia have in youth accustomed themselves to the use of neutralizing spectacles, the eyes are in all respects similar to emmetropic eyes, and the myopia is, under such circumstances, remarkably little progressive." "I am acquainted with numerous examples of this even among those of my friends who have passed their lives in study."[1] And, again, in speaking of insufficiency of the internal recti

[1] Op. cit. page 421.

muscles in myopia he says, "The insufficiency first makes itself known by asthenopia muscularis in binocular vision for near objects. Sometimes we find (at least temporarily) the proper remedy for this state of things in concave glasses, which bring r^a [the furthest point of binocular distinct vision] to from 12″ to 14″, and we may try these if there is no contra-indication for other reasons against them."[1]

These statements may be looked upon, I think, as decidedly favourable to the position which I have endeavoured to establish, not only as regards the cause of the muscular asthenopia, but as regards the benefit to be derived from the elimination of this cause in correcting the asthenopia and in favourably modifying the development of the myopia.

It is, however, from the careful application of prismatic glasses, to be worn whenever the eyes are used for near work, the strength of the prisms to vary, as a rule, with the degree of the myopia, and the distance at which the work is to be done, whereby we are enabled to neutralize the excess of convergence over accommodation; or, where the myopia has reached such a degree that the far point lies nearer than 8° or 10° from the combination of concave and prismatic glasses, that we shall be able to derive the greatest benefit in our treatment of progressive myopia.

This plan of treatment, indeed, is that from which Von Graefe obtained most satisfactory results in the management of myopia, in connection with which he had proved, in accordance with his method (the fallibility of which, under such circumstances, has, I think, been clearly established), the existence of insufficiency of the internal recti. That it has not been more generally adopted, and that it has not been attended with that degree of success which its rationality would seem to bespeak for it, is not the result, I believe, of any defect in the method itself, but of its applicability having been based upon incorrect grounds, which, of course, rendered the construction of correct rules for its application impossible.

Our starting-point in the formation of such rules should be the restoration of parallelism between convergence and accommodation; but, as in hypermetropia, its complete restoration by entire correction of the error of refraction by convex glasses, though theoretically the proper remedy, is not to be thought of so long as accommodation remains active; so, in myopia, its complete restoration by means of prisms, though equally correct in theory, would be quite as erroneous in practice. As prismatic glasses have been resorted to heretofore in the treatment of myopia upon the theory of the existence of insufficiency of the interni, which it was considered desirable should be completely corrected, the error, I think, has been made of prescribing those of too great strength; which, proving on this account irksome and productive less of comfort than of discomfort, have been forthwith thrown aside.

[1] Op. cit. page 426.

In determining the strength of the prisms which are required in any given case, we should first ascertain the degree of the myopia, and then the character of the near work at which the eyes are usually employed, so that we may know for what distance the correction is to be made. If the myopia is found to be so great as to require the work to be performed nearer the eyes than would be otherwise desirable, we should, by combining a concave surface with the prism, remove the binocular far point to the desired distance; and we must, then, in our calculations, consider only the myopia which remains uncorrected. We should next ascertain the width between the centres of the pupils (which may be readily done, with sufficient accuracy, by means of an ordinary tape measure, or rule, held across the bridge of the nose, the patient being directed, in the mean time, to regard some distant object so that the optic axes may be parallel); and, having learned this, we may now find by calculation, in the manner before described, the actual excess of convergence over accommodation for the distance which we have selected.

This calculation, though not absolutely necessary in practice, is desirable because, as has already been pointed out, if the disproportion, thus obtained is found to be less than the apparent insufficiency shown by Von Graefe's test, it shows that besides the refractive anomaly, there are other causes tending to produce difficulty of convergence; and this knowledge would justify us in prescribing stronger prisms than we should otherwise do. By constructing a reference table which would show the disproportion proper to the different grades of myopia at the usual working distance, say 10°, with a maximum, medium, and minimum interocular width, we may save ourselves the trouble of making the calculation in each individual case.

Most important, however, is it for our purpose, to carefully ascertain, by means of Von Graefe's test, the *apparent* insufficiency of the internal recti, at the distance for which it is proposed to make the correction; because it is mainly upon the result of this that our determination in regard to the strength of the prisms to be selected must depend. We should, moreover, not neglect to repeat this test after neutralization of the myopia by concave glasses; under which circumstances, if we are careful to observe that the patient accommodates accurately for the distance at which the test object is held, which he may be inclined not to do on account of the unusual effort required to overcome the action of the glasses, we shall generally find that all indications of insufficiency have disappeared. If, however, crossed diplopia still persists, and we are satisfied that accommodation is being properly directed, we must conclude that there is either true insufficiency of the internal recti or difficulty of convergence, such as has been already referred to.

And here I would suggest the advantage of substituting for the dot either a small cross or a star, as it will be found easier to accommodate accurately for them, owing to their more striking outlines. The line

should, I think, be entirely omitted, as it is in reality of but little advantage; and, on the other hand, it may, as I have found from my own experience, greatly interfere with the accuracy of the result. The cross combines, in a measure, the advantage of the dot and line without the disadvantage of the latter; if astigmatism happened, however, to be present, it might be productive of some confusion as regards accommodation.

What proportion of the apparent insufficiency it is allowable, as a rule, to correct, I am not prepared to state. Experience alone can determine this point, and of this I have not had sufficient to justify me in expressing an opinion. With the approach of presbyopia the total value of this apparent insufficiency should diminish; and, therefore, we may conclude that with advancing age, other things being equal, the strength of the prisms required would be less; a rule exactly the opposite, and for reasons which are manifest from what has gone before, to that which maintains in the correction of hypermetropia.

For myself I find very decided comfort when compelled to use my eyes persistently for near work, as in reading or writing, from the use of prisms of 2°, the bases, of course, turned inwards. As I have, with myopia $\frac{1}{18}$, an interocular width of 64 mm., the difference between the convergence which is necessary for binocular vision at 10″ (about the usual distance for reading) and that which would correspond to the amount of accommodation which I exercise at that distance ($\frac{1}{26\frac{1}{2}}$) amounts to 8½°. A prism of 12° corrects the lateral deviation of the dots at the same distance when Von Graefe's test is applied. It must be borne in mind, however, that by a prism of 12° is meant one whose angle of refraction is 12°, and that it does not refer to the angle of declination. Its angle of declination, in the position in which it would be held in making the test, would be somewhat more than half of its angle of refraction. From which we see that the apparent insufficiency, as we should expect, amounts to about 2° less than the actual disproportion obtained by calculation; and that the prisms which, practically, are found to be of most benefit correct only about one-third of this; those which neutralize the whole of it being quite intolerable.

The objection which has been urged against the use of prisms in muscular asthenopia, that the weakness of the muscles would thereby be increased, evidently does not apply to their use in the asthenopia of myopia, because, as we have endeavoured to show, this is not the result of muscular weakness. Of course, as in the use of convex glasses in hypermetropia, after the habit of wearing them has become established the need of them will be more felt; but, on the other hand, we have the prospect, unless the degree of the myopia be high, of being able to cast them aside altogether upon the approach of presbyopia.

I should not omit to mention, moreover, the advantage which may be derived from an eccentric position of the ordinary concave glasses, whereby a degree of prismatic action is obtained. In the higher grades of myopia

where concave glasses are necessary, even for near work, we may, by increasing the distance between the glasses, so that each eye shall look through the inner half of the glass, obtain an effect similar to that which would be produced by the combination of a prism, base inwards, with a concave glass; and if the lenses needed for such correction are of considerable strength, the prismatic effect which we can thus obtain may be sufficient for our purposes. We may, also, correct in this manner very satisfactorily that slighter excess of convergence over accommodation, which, as I have pointed out, may, under such circumstances, exist even for distant vision. In the slighter degrees, also, where total correction for near work may not prove acceptable, we may, by a partial correction and an eccentric position of the glasses, restore parallelism between convergence and accommodation and obtain very satisfactory results.

And here I would direct attention to the ill effects of a habit, which is only too common—that of wearing nose-glasses, for the correction of myopia for distant vision, the centres of which are often much nearer together than the centres of the pupils. As the result of this we have prismatic action the opposite of that just described, and necessitating, in order to overcome the diplopia which would otherwise result, a certain amount of convergence of the optic axes even for distant vision, with which an accommodation movement is associated, whereby the short-sightedness is not only temporarily increased but the progress of the myopia promoted. Though attention has been directed to this point before, it does not seem to have received the consideration which it deserves on account of its practical importance.

The division of the external recti muscles in muscular asthenopia in connection with progressive myopia, which has been recommended as a means of arresting the increase of the latter, is an extreme measure which, even where real insufficiency exists, it seems to me should be rarely resorted to, because, in most cases, the benefit to be derived from the operation may be obtained in a more satisfactory manner by the use of prisms; and where the insufficiency is the result of the anomaly of refraction, and, therefore, is only apparent, it is certainly not to be thought of.

BALTIMORE, Nov. 1, 1873.

ART. V.—*Some Points in the Mechanism of the Cranium considered with Reference to the Causation of Fracture.* By H. ALLEN, M.D., Professor of Comparative Anatomy in the University of Pennsylvania.

NOTWITHSTANDING the many learned essays which have appeared and the ingenious experiments which have been made with the object of illustrating the laws controlling the mechanism of the cranium, there yet remain

some points requiring explanation. The cranium has been studied almost entirely (not to consider here questions of philosophical anatomy and ethnology) from the surgeon's point of view rather than the physiologist's. We have argued backward from the lesion to the normal structure, rather than, as we should have done, forward from the normal structure to the lesion. The force that breaks, or tends to break, is surely of less importance than the force that preserves from breakage. In a word, the study of the cranium as an organ designed to resist force has been neglected to the advantage of those studies in which the action of external force has been mainly concerned. Thus it was long ago observed that the wound made by a missile penetrating the brain case would be larger within than without; from which it was concluded that the inner plate was the more brittle of the two, and was in consequence named the vitreous plate. The fact established by Mr. Wm. Fred. Teevan,[1] that, if the missile be directed at the sides of the brain case from within instead of without, an opposite result was produced, proved that the question assumed had less to do with the skull as a physiological structure than it had with an isolated problem in dynamics.

Unfortunately the study of cases of fracture of the skull does not assist us in arriving at satisfactory conclusions as to the manner in which the skull has resisted a force from without. Such general facts as the ovoidal figure of the skull, the presence of spongy tissue at its base, the distribution of numerous sutures, etc., which may serve as non-conductors, will rarely apply to cases of fracture as seen in our hospitals or even in private life. Any one can satisfy himself of the truth of this by glancing at the reports of cases of this lesion. It is the exception rather than the rule to be assured, from the description given, as to what portions of the brain case the lesion may be sought for after death, or to explain their positions when they have been found. Every report should state not only the exact position of the body at the time of the accident, together with a description of the agent of force, whether a missile or the fall of the body, but some approximative estimation of the volume and kind of force. It is needless to say that an exact anatomical description of the injury, as studied on the dissecting table and from the skull subsequently, should be appended.

Few cases will stand this test. Until the record is fashioned differently from what we have found it, a study of the literature will yield no results of value.

We have been compelled, therefore, in approaching the subject, to tread on theoretical grounds, using analogy to support our position where demonstration fails.

[1] "An Inquiry into the Causation, Diagnosis, and Treatment of Fractures of the Internal Table of the Skull," Brit. & For. Med.-Chir. Rev.," 1865, p. 189. Also, "Experiments and Inquiries into Certain Wounds and Fractures," Ibid. 1864.

The figure of the *cranium* is observed to be thinner at the anterior and posterior cerebral fossæ than at the middle fossa of that name. The region of the face underlies the first mentioned, the deep cervical muscles protect the second, while the middle receives within its base the enormously thickened "petrous bone."[1] At least these are the leading features of their respective regions. The anterior cerebral fossa is of unusual significance, since it is the weakest part of the cranium. Numerous cases have been narrated of fracture of the orbital plates by sharp or blunt instruments being thrust upward above the eye. Fractures of the same plates by indirect force extending from the cranial walls will be considered further on. If the bone at this region be examined, it will be found void of diploe. It is a suitable point, therefore, from which we may proceed to the remarks we have to make upon the distribution of this substance in the cranial walls.

The *diploe* is usually described as forming a layer of cancellated structure between the outer and the inner plates of the skull. It is very unequally distributed. It is massed at about the centre of the basi-cranial axis, on either side of the occipito-sphenoidal junction; it passes backward and is abruptly lost in the compressed basilar process, but enlarges forward to enter the great wing of the sphenoid bone which it makes up in the main. A conspicuous collection exists in the occipital condyles; another smaller one is found in the apical third of each petrous bone. Next we find the vault receiving a thin layer. Many parts of the skull are entirely free from diploe, as for example, the cerebellar fossa, the floor of the grooves of the lateral sinuses as they approach the base of the skull, the roof of the glenoid fossa, the greater part of the squama, the outer two-thirds of the petrous bone, and the orbital plates of the frontal bone. These parts are necessarily inherently weak, not from their several positions, but from the absence of the shock-distributing tissue, the diploe; and we infer that they must incur fracture when by accident they are compelled to bear the brunt of direct violence. Hence the weakness of the orbital plates as distinct from their relations with the face. Fracture of these plates is more frequently seen as a result of force applied upon the cranial walls than upon the facial.

It is well to remember that the names—the outer and inner plates of the skull—are more or less conventional. There is but one well-defined and constant plate, and that is the *inner*. The places at which the diploe is absent the outer plate may be said also to be absent, and the thinning at the points under observation is not so much due to the union of the plates as to the absence of one of them. The outer plate is well shown at about the osseous sinuses and the foramen magnum; but throughout the vault it

[1] By common consent the phrase "petrous bone" may be used in this connection for the cumbersome phrase, petrous portion of the temporal bone.

is less defined—and by the numerous veins seeking outlet from the diploe to the scalp—we have the outer plate in many places forming but a thin covering to the outer row of diploic cancelli.

The contrast between the markings upon the two plates is great, while the markings themselves are independent of one another—so much so, indeed, that each must be considered separately. The inner plate is for the most part smooth. The sutural lines are not serrate. The digitate impressions and the associated ridges are peculiar to this plate. The outer plate is not marked by depressions, and its processes are entirely independent of the inner plate. From the above data we would submit the following: The inner plate is the true osseous envelope of the brain; the outer plate and diploe is but a single layer modified by muscular impressions, and by processes uniting the cranium to the face.

The force of a moderate blow upon the diploic layer does not tend to pass directly to the inner plate, but to radiate through the cancelli; and when the sutural markings remain, the force of the blow may be confined to the bone receiving the shock. Even when the shock passes thence, it is more reasonable to infer that the force is transmitted along the cancelli of adjacent bones than that it passes inward to the inner plate. Were it otherwise, fractures of the latter plate would be far more frequent. With a view of illustrating the distribution of force through the entire cranial figure, let us surmise that a blow has been received upon the right parietal bone. The serrated sutural lines between the opposite parietal and the portions of the frontal and occipital bones entering into the vertex tend to prevent its transmission either to the opposite side or to the forehead or occiput, while the squamo-parietal suture prevents its direct conduction to the ear. It is not prevented, however, from passing downward and forward along the anterior inferior process to the cancelli of the great wing of the sphenoid bone and thence to the body, or along the posterior inferior process to the mastoid region to be dispersed among the cancelli of the mastoid process, or on the occipital condyles. It will also be seen that lines of force sent along the angles of the parietal bone may be weakened before reaching the cancelli at the base by deflection across the inferior portion of the non-serrate parieto-occipital suture into the cancelli of the occiput, or forwards along the external angular process across the equally harmonic portion of the parieto-frontal suture.

The anterior inferior and posterior inferior angles of the parietal bone can be compared to pillars of a parietal half arch. Each pillar rests upon cancellated abutments. The anterior of these is supported by the frontal bone, and the posterior by the occipital bone.

The anterior parietal pillar, as it may be termed, has a peculiar arrangement with the orbital plate, which it will be remembered represents a portion of the inner plate of the cranium. An examination of the frontal bone shows that the inner plate of the cranium at the roof of the orbit is

articulated with the outer third of the lesser wing of the sphenoid bone, and thence forms the bridge which, as a rule, converts the sphenoidal fissure into a foramen. It forms with the lesser wing the posterior edge of the anterior cerebral fossa. Now, the broad triangular space which lies between the external angular process of the frontal bone and the edge of its orbital plate is irregularly marked by the shelving layer of diploe, which corresponds to the surface of the great wings of the sphenoid bone. It is upon this surface that the outer edge of the orbital plate above described rests. Bearing in mind that this thin, hard, brittle plate rests upon an abutment of cancelli represented in the greater wing of the sphenoid bone, any shock transmitted downward along the cancelli of the vault to the region of the forehead would not injure the orbital plate, for the cancelli lies above its plane. But a shock sent along the inner plate would necessarily be received upon the orbital plate as representing the limit of the inner table anteriorly.

Let us suppose that a blow is received upon the occiput. It is easy to understand that the diploe may convey the shock to the anterior portion of the brain case without interference, and thence transmit it along the great wing of the sphenoid bone to the base. If the stroke upon the occiput be sufficiently severe to contuse the diploe through its entire thickness, the inner table is broken at a point opposite the contused portion. As is known, this contusion need not be direct, but mediate, when we may expect fracture of the inner plate only. As a rule, however, both plates are broken.

It can be conceived that a shock may thus be received upon the inner plate and transmitted along its entire length and finally expend its force upon the orbital plates. This would appear to be the explanation of the lesions found in the case of President Lincoln. A pistol ball penetrated the cranium one inch to the left of the median line of the occiput just above the groove for the lateral sinus. It thence passed forward in a straight line and lodged in the left striated body. Both orbital plates were fractured. Since these plates were not struck by the ball, it remained an open question how the fracture was produced. Professor T. Longmore,[1] of Netley, believes the lesions above described are to be attributed to a—

"transmitted undulatory stroke or sudden impulse of the brain substance itself against the thin bony layers constituting the orbitar plates. I am in possession" continues he, "of the notes of a case in which a similar fracture took place in one orbitar plate, from a ball passing along only grooving the upper surface of the hemisphere lying over the plate broken."

Dr. George W. Otis, U. S. A., in the *Surgical History of the War of the Rebellion*, p. 306, accepts Prof. Longmore's opinion as being more satisfactory—

"than the hypothesis that the fracture was produced by *contre-coup*. The unusually thin orbital plates on either side were exposed to the impulse of the cerebral pulp. Even if they were not fully protected from the vibrations in the

[1] The Lancet, 1865, i. 649.

vault of the cranium, by the dense supra-orbital ridges, it might be inferred that the force would be transmitted mainly to the right orbital region, or that opposite the entrance perforation, whereas *both* orbital plates were fractured."

Among the reasons given by Prof. Longmore for believing that the shock could not be transmitted along the cranial walls is, "the expanse of the frontal bone itself and the several processes within which the orbital plates are held, and by which they are so strongly protected in all directions laterally."

If the proposition we have stated above, that the lines of conduction of force are different in the diploic layer from those of the inner, this layer cannot transmit vibrations to the processes. Neither does the inner table give to the diploe any vibrations which are primarily received within its compact tissue. A blow upon the cranium, say the occiput, awakens two distinct sets of waves; one of these moves along the diploic layer—and is lost in the processes, the other is carried by the inner plate to the anterior cerebral fossa.

Now, in the case of President Lincoln, the ball, not expending its force about the wound of entrance, yielded the greater part to both tables of the cranium. The outer diploic layer appropriated the vibrations, and transmitted them to the great wings of the sphenoid bone, and thence to the axis of the cranium, without injury to the skull. The inner plate, not having any means of diverting its burden of force, carried it forward in two divergent lines from the wound of entrance to the orbital plates (which lie, as is known, about on a level with the upper margin of the tentorium), and broke them. It is to be inferred, that, had the ball entered either above or below this line, the conduction of waves toward the forehead would have been greatly modified.

When the cranium receives excessive volumes of force, which it cannot disperse and yet preserve its integrity, we have presented for study some of the most frightful of lesions.

If our views concerning what we may term the parietal arch are correct, it will follow that the lines extending along the great wings of the sphenoid bone to the body, or along the mastoid portion of the temporal bone, thence across the occipital bone to the foramen magnum, would be frequent sites of fracture, resulting from the charging of the tracts with rays of force in excess. This, indeed, is the case. But the "petrous bone" is also found so often fractured that the escape of the sub-arachnoid fluid from the external ear, through fissures of the "petrous bone," is sought for as a sign of fracture of the base of the skull.[1] How can we

[1] In evidence of the loose method which apparently satisfies the describer of these and similar lesions, we may mention the phrase, "fracture of the petrous portion of the temporal bone," which we see used so often. When we recall the exceedingly diverse elements entering into this region—the dense walls inclosing the labyrinth, the spongy tissue at its apical third, the wafer-like covering of the cavity of the tympanum, and the irregular portion of the tubal and carotid portions—the above phrase, used unqualifiedly, is very indefinite.

explain that the part, which is apparently protected, is so often found fractured? We think, in one of three ways, as follows:—

First, by premising the exertion of such violence that analysis is defied—the literal mashings of the skull we sometimes see when scarcely a bone entering into the base will escape. *Secondly*, by exceptional conditions of the skull, especially diseased conditions, when propositions based upon the normal distribution of the cancelli and compact tissue are much disturbed. In hyperostosis of the cranium we find the diploic layer everywhere exaggerated, coincident with an increase of the number and strength of the inner plate, which present everywhere a great increase of the number of the digitate depressions and ridges.[1] Syphilitic osteitis is especially liable to weaken the vault of the cranium by eburnation of the cancelli, when the diploe of the great wing of the sphenoid bone often becomes compact with early obliteration of the spheno-parietal and spheno-frontal sutures. *Thirdly*, by the force being received primarily upon the base, as when the subject of the fracture falls from a height in such a way that the base of the skull becomes a fixed point upon which the body is thrust with great force.

The fracture arising from this last-mentioned cause is worthy of a more-extended mention. Dr. Hinton, in his Lectures on the Cranium,[2] says that the transmission of vibrations from the occipital condyles in the direction above mentioned—

"accounts for the fracture through the petrous portion of the temporal, that is so often observed as a concomitant of a severe diffused blow on the top of the head, such as is incurred on falling to the ground from a height.

"That this is really an explanation of the cause of the frequency of the fracture occurring through the petrous bone, in such cases, is, I think, sufficiently proved by the following experiment, which suggested itself to me, and which I performed a short time since relative to this subject.

"Having fixed an ordinary adult skull on a firm support, with its vertex downward and its base upward, I placed a strong piece or bar of wood across the occipital condyles, and then, by means of a hammer, applied a stout blow, as evenly as possible, over its centre. The result of this, as I expected, was fracture through the petrous portion of the temporal, the line of fracture intersecting the *membrana tympani*."

From the rude experiment here resorted to, Mr. Hinton infers that the force of the blow, received at the base of the skull in life, is comparable to that transmitted from a *flat* surface. This is evidently a misconception. The occipito-atloid articulation is convexo-concave, and the weight of the head is supported, not so much at the centre of the facet, as it is upon points of contact before and behind that centre. As is known, the occipital condyle presents two facets—an anterior and a posterior. They are subject to great variation. In some specimens the outlines of the facets

[1] There is a specimen of this disease showing these conditions in the Wistar and Horner Museum.

[2] Notes on some of the Developmental and Functional Relations of Certain Portions of the Cranium, London, 1854, 60.

are but faintly separated from one another when the entire condyloid surface looks like a single facet, or they may be made distinct by a wide sulcus between them. The posterior facet is nearly circular in shape; the anterior is elliptical. In the accident Mr. Hilton's experiment is designed to explain, it is not probable that both these articular surfaces receive a shock at the same time. If the head were raised, the posterior facet would surely receive the brunt of the shock. If, on the contrary, the head were flexed, the anterior portion would receive it. It is also well to bear in mind that the plane of the condyle is oblique to the plane of the basial axis of the skull. The antero-posterior axis of the condyle converges toward the median line at the same time that the articular surface is tilted outward and downward. The weight, therefore, is received upon the atlal facets in such a manner that the skull is pressed *downward* and *outward*, and not directly downward, as is generally supposed. As a result the atlas gives a little lateral support to the condyles in addition to receiving and transmitting the weight downward to the superior articular facets of the axis. The lines of weight finally converge from the lateral to the median parts of the last named bone, and from that point the weight of the head is borne upon the bodies of the vertebral column. Accepting these lines as representing the normal distribution of the weight, it is only necessary to reverse the position to explain the fractures in the position named by Mr. Hilton, viz., the skull being fixed and the body thrust into its base. The weight of the body being represented as a unit of force divides at the axis into two—one for the left, the other for the right axal facet, thence to the atlas, which in turn transmits them to the occipital condyles. Here each again divides, one for the outer and the other for the posterior facet, both of which, resting, as they do, upon the abundant cancelli, tend to disperse much of the force, and the skull escapes injury. If, however, the volume of force is so great that it cannot be so dispersed, the posterior facet will transmit to the post-atlal region, and the skull be here fractured, or the anterior will send it upward and inward toward the basicranial axis, where by their convergence will actually tend to cancel one another. If, however, the force be excessive, the two ultimate lines will cross at the median line, and, pursuing the direction of greatest vibration, will reach the petrous portion of the temporal bone, with the destructive result so often seen after falls from a height upon the vertex. It will then be seen that the mechanism of fracture from this position is much more complicated than Mr. Hilton would have us believe.

The subject is one of great complexity, requiring careful analyses of many cases before determining a single point. Until such exhaustive study shall have been instituted, we must rest satisfied with theory based upon examination of normal structures.

ART. VI.—*On some Sources of Syphilitic Infection.* By JAMES NEVINS HYDE, M.D., Lecturer on Dermatology and Syphilis in the Rush Medical College, Chicago.

THERE would, at first thought, seem to be a reasonable prospect of the total disappearance of syphilis from the face of the earth, if every individual exhibiting its primary lesions could be induced to forego the acts by which its virus is propagated. Or if such an inspection as the "Contagious Diseases Act" contemplates, and such as is actually enforced in many cities, could be so rigidly executed that affected females might be invariably secluded in hospitals till their recovery, a great decrease in the statistical preponderance of the disease might be reasonably expected. There are certain moral and physical concomitants of the malady which would strengthen such an expectation, since they tend to its self-limitation. Such are: The fear of exposure to a second attack of the disease, or to an aggravation of that already existing; the fear of a recognition by others of a condition which would declare itself in the consequences of an impure coitus; the fear—natural to all except the most depraved—of infecting others; actual bodily discomfort, indisposing to the performance of the venereal act, etc. In the face of these facts the disease is constantly extending, and the question naturally arises, Are there methods, by which the virus of syphilis is transmitted from individual to individual of the human family, different from, and in addition to, those with which we have had occasion to be most familiar? This question, though not categorically answered by many authors, is alluded to occasionally in their treatises on the subject, with a distinctness which it is worth while to consider. These unusual causes of syphilis are, it must be remembered, necessarily difficult of recognition, and, for that reason, have been deemed of rare occurrence.

I. *The ordinary menstrual secretion of a syphilitic female is capable of producing chancre and its consecutive symptoms, under such circumstances as would insure contagion from a primary sore.* Syphilographers and the general profession are now agreed respecting the contagiousness of the blood of a syphilitic subject. The oft-quoted experiments of Prof. Pellizari, of Florence, are considered conclusive on this point. On the 6th of February, 1860, he inoculated Dr. Bargioni with blood taken from the veins of a syphilitic female. This inoculation produced successively a papule, an ulcer with an indurated base, and a specific roseola upon the cutaneous surface, in sixty-five days. Full details of all the circumstances of this experiment were given to the world.[1] It is now

[1] —— "détails qui m'ont été fournis par le courageux champion qui en est l'objet, mon excellent confrère et ami le docteur Bargioni," etc. Traité de la Syphilis, Lancereaux, Paris, 1866, pp. 619–621.

also admitted that vaccinal syphilis is due to the admixture of the blood of the vaccinifer with the lymph obtained from vesicles—the lymph itself not having been demonstrated to possess the virulent qualities of the blood.[1]

Now, in order to establish the possibility of infection by blood *during intercourse*, I adduce one instance only, at the outset, in which the transmission of the disease occurred from the male to the female.

Dr. C. Mauriac, of the Hôpital du Midi, Paris, reports, in the *Gazette des Hôpitaux*,[2] that during the Prussian siege of Paris, a man had successively indurated chancre, roseola, crusts in the hair, adenopathy, and mucous patches of the throat. The chancre, as well as the cutaneous and mucous lesions, disappeared under a mercurial course. He was aware of the contagiousness of the blood in syphilis, and was therefore greatly alarmed on discovering, after coitus with his wife, that an abrasion had occurred upon his penis, from which some drops of blood had exuded. He had then absolutely no other lesion of the surface of his body. In three weeks his wife, who was entirely free from prior syphilitic accidents, consulted Dr. Mauriac for vaginal chancre, which was succeeded by moderately severe consecutive symptoms.

To return, next, to the catamenial discharge, it is not found to differ from ordinary blood, except in so far as it is deprived of the power of coagulation by its admixture with the acid mucus derived from the vaginal walls. If its fibrin be in excess of that acid, clots are actually formed. And since it can be traced to its source, where it issues from the capillary orifices of the uterine veins, it is to be considered technically rather as the result of a uterine hemorrhage than a uterine secretion. Nothing appears herein which would justify its exemption from the virulence of the fluid circulating elsewhere in the same system.

All other instances of syphilitic infection of the blood must be rare in comparison with those in which the same result obtains after intercourse. Nor need it be concluded that such a transmission of disease can only occur during the period of actual menstrual flow. Inmates of houses of prostitution are the frequent subjects of menstrual derangement, due, partly, to their mode of life with its excesses and debaucheries, and, partly, to the fact that they are frequently the victims abandoned by the seducer and given over to the abortionist. Even the slightest weeping of infected blood from the os tincæ of such women, before or after the monthly epoch, can be shown to be capable of inflicting incalculable injury upon those who have relations with them.

It is especially worthy of note in this connection that, inasmuch as one attack of syphilis confers a relative degree of immunity against a second, the chances of infection from a woman of the town are greatly in favour of that by the blood, as against that by primary sores—liability to occurrence of the latter class of lesions having been probably removed by pre-

[1] Archives Générales de Médicine, vol. i. p. 641, vol. ii. pp. 32, 297: Viennois, Paris, 1860.

[2] 1872.

vious explosions of general syphilis. Fournier alludes to this fact in explaining the relative frequency of non-infecting sores in the hospitals of Paris, and describes these women as "Syphilitiques Émérites," capable only of transmitting those diseases for which there is no positive proscription.[1]

The number of professed prostitutes who have, at some period of their lives, been affected with constitutional disease, must be exceedingly large. In the absence of statistics bearing on this point, a relative idea may be gained from the extent of the syphilitic infection of a class of men who resort to notorious houses. Every soldier of the British army loses annually more than eight days of service in consequence of venereal disease alone. Dr. Balfour relates in the *Statistical Report of the Medical Department of the British Army* for 1860, that more than one-third of all the admissions into hospital were from this cause—369 per 1000, and the average number constantly in hospital was 23.69 per 1000. Sixty per cent. of the cases reported as venereal were syphilitic. In 1862 the admissions for primary syphilis were 99.4 per 1000, and in 1863, 93.8 per 1000. In the French army there were, in 1862, 10,988 admissions to hospital for primary syphilis, out of an active force of 304,733 men. In our late civil war, from 1861 to 1862, there were 9011 reported cases of syphilis, and from 1862 to 1863, 13,781.

It is difficult to conceive, in view of what precedes, of so large an army of syphilitic subjects as infected solely through the medium of primary sores. For, in the first place, the statistics of the Bureau des Moeurs, which is the department having sole charge of the Parisian prostitutes, show that the average life of these abandoned women, while engaged in their occupation, extends throughout a period of four years, the whole number changing during that time. In some of our American cities the duration of this life is estimated as high as seven years.[2] And, next, it is to be considered that throughout this period, lasting from four to seven years, there can be estimated, for each woman who served as a depôt of virus for each soldier, a limit of a few weeks for the existence of chancrous ulcers, but a limit of many months (and possibly the entire number of years passed in prostitution) in which she was capable of transmitting her disease by a few drops of menstrual blood.

The Venereal Commission appointed by the Lords of the British Admiralty state in their report, which is founded upon the evidence of eminent English practitioners, that "there is conclusive proof that syphilis may be communicated by sexual intercourse, during its constitutional stage." The exact manner is not explicitly stated, but it may be inferred that, according to their belief, such communication may occur when no secondary

[1] Nouv. Dict. de Méd. et Chir., Jaccoud, Paris, 1867, vol. vii. Art. "Chancre."
[2] Med. Record, 1873, May 15. Edit.

lesions exist upon the genitals. Otherwise, this statement would merely give concurrence to the contagiousness of such secondary lesions—a fact which has long been definitely established.

The following details of facts, collected by a contributor to the *Medical Record* for February, 1871, serve to render probable the frequency of contamination of men during intercourse with syphilitic women, by the medium of catamenial or uterine blood: since they show the rarity of the discovery of any other sources of infection, in examinations made expressly with that end in view:—

"Dr. Evans, an army surgeon, and the author of a work on Venereal Sores, remarks, that an altered secretion impossible of detection is sufficient for the production of disease; adding, that when he attended the examinations of 200 women of the lowest description, who were frequented by the soldiers of the army at Valenciennes, *no disease could be detected* in the women, and yet the hospitals were filled with diseased soldiers infected by these very prostitutes. He noticed exactly the same thing at Lille, and observes, that the condition that communicates disease in the female is only to be known by its effects."

Dr. MacLaughlin, after a practice of 27 years in Paris, during which he pursued a rigorous system of "confrontations" in connection with the French police agents and surgeons, asserts that it was "*excessively rare*" for them to discover the source of infection in the female. In one gentleman, where secondary symptoms of a severe type were developed very speedily after primary sores—a case pronounced to be unequivocal syphilis by M. Biet, and others—the only two women with whom the patient had ever had connection were brought up and repeatedly examined by five or six medical men, including the police surgeon, and *not the slightest trace* of disease could be detected in either of them.

Mr. Skey, in a letter written to this gentleman in May, 1864, referring to these facts, says, that he is convinced, in common with many others, that "*discernible disease in the female is not necessary to the production of venereal disease in the other sex*," and that every variety of sore, and every form of purulent discharge from the slightest to the most intense, can be contracted from women who have not, in their persons, indications of disease of any kind.

M. Simon, an eminent European pathologist, says: "The various local states, which most habitually spread the infection of true syphilis, are *constantly overlooked* in examinations made expressly for their discovery.

Fournier states that of 873 cases, taken promiscuously and occurring in hospital wards under his charge, 625 contracted syphilis from women registered by the police, and frequently examined by the police-surgeons.

Vintras testified before the Venereal Commission, that almost all local sores productive of true syphilis were, in Paris, derived from women who made prostitution their sole business, and who were consequently registered and subjected to periodical examinations.

How are these facts and opinions to be explained? Here is proof, which cannot be ignored, that a very large number of men were infected with

disease by women who exhibited no evidences of it when examined by the aid of the speculum. It may be admitted that the study of syphilitic lesions has been largely pursued in the field offered by the male sex, where the phenomena of the disease, with the possible exception of "urethral chancres," are patent to a careful observer. Without doubt, one source of failure in the cases narrated was the difficulty of detection of minute chancrous erosions in the extensive and lax mucous tract presented by the genitals of the female. But, making due allowance for all this, there cannot be a doubt that a large proportion of the women examined were "syphilitiques émérites," and had communicated the virus of the disease by the medium of catamenial or uterine blood.

In 1863 a gentleman consulted me for the relief of a chancre upon the frenum, succeeded by slight secondary manifestations some weeks afterwards, who gave me the opportunity of "confrontation" with the woman by whom he had been infected. I examined her with care, and could discover no lesion of the genitals. She had, however, a node upon the right ulna, and confessed to a previous history of syphilis. Contagion had occurred almost immediately after the menstrual epoch. At that time I could only account for the accident by the hypothesis of a mediate contamination.

A case of greater value for the purposes of illustration came under the observation of a medical practitioner of large experience, to whom I am indebted for its details.

He was consulted by a gentleman for relief of an indurated sore, which was subsequently followed by secondary accidents. The woman charged with being the source of the disease was examined with great care and on several occasions, without the discovery of any trace of primary or secondary accidents. Upon persistent representation, however, of the infected patient, a final examination was made, which resulted in the recognition of a slight oozing of blood from between the lips of the os uteri. The woman was found to have suffered from primary disease several months before, which was succeeded by a single explosion of the constitutional dyscrasia.

II. *The secretions of a uterus, which is the seat of secondary syphilitic deposits, are capable of producing chancre and its consecutive symptoms, under such circumstances as would insure contagion from primary sores.* The infectious character of catamenial blood in constitutional syphilis being determined, it is clear that the discharges from a uterus which is itself the seat of visceral syphilis must be in an equal degree virulent. Evidences of this fact are not wanting in the writings of late authorities.

"Secondary syphilitic discharges from the uterus," says Tanner,[1] "have the property of producing balanitis of a specific nature, which may be followed by thickening of the prepuce and constitutional infection. Mr. Langston Parker very properly insists that a positive inoculation takes place in these cases, and gives examples of its occurrence. . . . If suffering from an acrid purulent dis-

[1] Practice of Medicine, Thos. Hawkes Tanner, Phila., 1872, pp. 292, 294, 311.

charge, owing to constitutional syphilis *affecting the uterus*, a woman is very likely to irritate, and perhaps to inoculate, whoever has connection with her. Secondary syphilitic affections of the uterus are by no means uncommon. They may either prevent conception, or, failing to have that effect, they will probably be the source of infection to the embryo. In these cases, the vaginal portion of the uterus is found to be enlarged and tender; the lips are indurated. There are one or more patches of excoriation around the os, of such extent, now and then, as to be mistaken for the ulceration of cancer; and there is a constant tenacious muco-purulent discharge from the uterine cavity. When the throat or the skin is likewise affected, the diagnosis will be much facilitated. These symptoms are rebellious and often removed with difficulty, a combination of local with constitutional treatment being required."

Erichsen[1] remarks, "there occur occasionally cases in which the male is infected by the diseased secretions of a syphilitic female during sexual intercourse, without there being any local sore through which the poison can be proved to be conveyed into the system."

Lancereaux,[2] in discussing these affections of the uterus, gives Whitehead as authority for the following special lesions:—

"1. Hypertrophy, with or without induration, affecting the lower segment of the uterus, and extending more or less over the whole organ. 2. Erythema, in which a deep red surface becomes more or less covered with disseminated, elevated and whitish patches, known as "follicular hypertrophies." 3. Excoriation. 4. Aphthous ulceration. 5. Endometritis. 6. Warty excrescences."

Two cases only are cited:—

One occurred in the practice of Duparcque. The uterus was found to be enlarged and mammillated. It distended the superior portion of the vagina, and was painful to the touch. There was a yellowish and sanguinolent discharge of a disagreeable odour. There had been syphilitic antecedents, and a cure was effected by the aid of mercurials. In the other case, reported by Montanier, the symptoms were lumbar pain, constipation, painful defecation, cachectic tint, emaciation, and greenish-yellow discharge. In the upper portion of the vagina, a mass could be detected as large as the fœtal head at seven months, and of indeterminate form. It was slightly indurated, noduled, free in the pelvis, but compressing both the bladder and rectum. The os tincæ was discovered with difficulty, but no ulceration was there evident. Somewhat later, a tibial node declared itself, and a syphilitic history was established. In this case also complete relief was obtained by appropriate remedies.

From these cases the author concludes that an interstitial inflammation supervened ("areolar hyperplasia" of Thomas?) productive of more or less extensive induration, and a specific product which the French call "gummy"—a term which is a misnomer in English, since it conveys an erroneous idea of the pathological condition.

Bernutz[3] affirms that he has found indurated chancres in the cavity of

[1] Science and Art of Surgery, Phila., 1869, p. 524.

[2] Op. cit., pp. 283–6.

[3] Cited in Review of Despeyroux's "Etude sur les ulcerations du col de la matrice et sur leur traitement," Am. Journ. of Syph. and Derm., Jan. 1873.

the cervix uteri; and Becquerel, of the Lourcine Hospital, states that the syphilitic affections of the same locality are presented in the form of ulcerations. This is a field of study where historical and clinical evidence is greatly needed. Without doubt a large proportion of syphilitic lesions of the uterus have been confounded with alterations of a non-specific character. Gosselin observes that, even in the absence of all treatment, many of them lose readily their primary features. The gynæcologists are singularly silent in respect to this pathological field. A well-known author, of Chicago, whose collection of works on the subject of uterine complaints was one of the most extensive in the country, but consumed unfortunately in the great Chicago fire, informs me that the entire subject of syphilitic lesions of the uterus has been largely relegated to the writers on Venereal Diseases. And this is the more to be deplored, since the recent improvements in the methods of diagnosis in uterine disorders, and the advance of knowledge, as a consequence, upon subjects more or less allied thereto, have opened up a path to further researches in this regard. And the subjects of uterine disease, even of syphilitic origin, are little likely to consult those who do not specially concern themselves with disorders of the womb.

It may be erroneously concluded, in consequence of the generally received opinion as to the order of development of many secondary and tertiary forms of syphilis, that this sequence of primary sore, visceral syphilis implicating the uterus, and contagion from its infectious secretions, must be of rare occurrence. Such a conclusion would not bear comparison with fact I have elsewhere called attention to Mauriac's cases,[1] which, in his view, demonstrate that the division of syphilis into secondary, tertiary, and quaternary periods, is arbitrary and artificial—a division no more applicable to syphilis, than to any other constitutional disease.[2] In one of the cases, whose details are given by Mauriac, there occurred so-called tertiary disease, involving the bones, periosteum, splanchnic viscera, and muscles, at the very inception of the malady. In a second, an attack of pericranial periostitis ushered in the evolution of later symptoms of a secondary type. In a third case, a frontal node occurred but twenty days after the appearance of a primary sore, and this was succeeded by roseola and secondary cutaneous and mucous accidents. In a fourth case the symptoms of the disease occurred in the following order: Doubtful primary accidents, periostitis, papulo-squamous syphilide, and laryngopathy.

I have lately had under treatment a patient who suffered from syphilitic hemiplegia, which was *succeeded* by cutaneous eruption of so-called secondary type.

[1] Gazette des Hôpitaux, Chas. Mauriac, Phys. to Hôpital du Midi.

[2] The retention of the terms secondary and tertiary in these pages is rendered necessary by their usefulness in the description of *classes* of syphilitic phenomena, and their very general acceptation.

It must not be forgotten that in primary, as well as secondary, accidents of the cervix uteri, uterus, and uterine appendages, the coexistent adenopathy is often beyond the recognition of the surgeon. That pleiad of glands which in the male extends along Poupart's ligament, and encircles the femoral ring, serving as a valuable aid to the diagnosis of syphilis in that sex, is frequently unaffected in females. When the uterus is affected, the *pelvic* ganglia become enlarged, irritated, and indurated, so that there may be syphilitic bubo, impossible of detection.

The question of the relative contagiousness of secondary symptoms need not be fully considered in this connection. In general, there is agreement as to the greater contagiousness of those secondary lesions, which present mucoid, muco-purulent, or purulent secretion. Condylomata, mucous patches, or tubercles, syphilides, which result from the so-called "transformation of chancre in situ," etc., are recognized as holding the first rank in this regard. Now, the secretions of a specifically diseased uterus are not only liable to become mucoid and purulent, especially when the cervix is affected, but these discharges are especially liable to be commingled with blood—not catamenial blood only, but that which is readily caused to issue from the mouth of the womb by even so simple an irritant as a sound.

There are several circumstances which strengthen the force of the foregoing conclusions. Such are: the manifest aptness of mucous membranes in general to exhibit the lesions of syphilis; the proximity of the uterus to the site of the larger number of primary accidents; the frequent patulency of its orifice; its periodical congestion and secretion; the very abundant supply of glandular tissue to the cervix; the fact that the cells of the Nabothian glands are supplied directly with nutriment from an abundant vascular plexus; and the consequent probability that an infection of the latter would result in a virulent secretion from the former; these circumstances, I repeat, lead to the conclusion that contagion from such a source must be very much more common than is generally supposed.

In short, what other viscus than the uterus has an issue of such changeable features? What other viscus is provided with such an ample conduit for the transmission of its secretions to the outer world? What other viscus could be affected with syphilis, and possess equal opportunities for its propagation by a virulent effusion?

III. *A gonorrhœal discharge, in a syphilitic subject, is capable of producing chancre and its consecutive symptoms, under such circumstances as would insure contagion from primary sores.* Since the day when the doctrine of Hunter, as to the identity of gonorrhœal and chancrous virus, was completely refuted, the two diseases have been almost entirely dissociated. There is some danger, consequently, of losing sight of the fact that they still have a common ground. Ricord was among the first to put forth the statement that "gonorrhœa will not produce syphilitic ulcers,

and not be followed by secondary syphilis, unless there be a chancre or syphilitic sore in the urethra." To this should be added "*unless, also, there be constitutional syphilis resulting from a precedent sore.*"

Dr. W. A. Hammond, in his lectures on Venereal Diseases (Philadelphia, 1864), teaches, that there is a "syphilitic gonorrhœa." His view is that the virus of an infecting chancre, when deposited upon a secreting mucous surface, may give rise to an inflammation of that surface, attended with a muco-purulent discharge, without a chancre being necessarily formed, unless an abrasion exists. The affection, thus produced by the virus of an infecting chancre, he calls a "syphilitic gonorrhœa" of contagious character and followed by constitutional symptoms. The virus of a soft, non-infecting chancre, when deposited upon a secreting non-abraded mucous surface, generally gives rise to a contagious muco-purulent discharge, without the necessary production of a chancre, and without consequent syphilitic infection. He also believes that the matter of each of these species of gonorrhœa will, when inoculated, give rise to its own particular form of chancre.

These views have not met with general approval, nor have they been established by clinical facts. They are referred to in this connection, merely for the purpose of contrasting them clearly with what should be termed a "*true syphilitic gonorrhœa.*" In this latter affection the gonorrhœal discharge may be lighted up by any of the usual or unusual causes of the disease, but, inasmuch as it occurs in an individual whose system is affected by constitutional syphilis, the muco-purulent secretion has the virulence of a discharge from a secondary lesion. It has been already laid down that those secondary lesions are most highly contagious which present a mucous or muco-purulent secretion; and a gonorrhœal inflammation in a syphilitic subject establishes just such a lesion. The inflamed surface presents all the phenomena of a syphilide, and its secretion is virulent, and capable of producing an infecting chancre.

Bumstead[1] admits that urethral discharges are sometimes due to changes in the mucous membrane lining the canal, induced by syphilitic infection of the constitution. In several instances, he has observed a muco-purulent discharge coinciding with the first outbreak, or a relapse, of secondary syphilis, so long after the sexual act that it could not be attributed to the ordinary causes of gonorrhœa. Bassereau alludes to the same fact. There is no more frequent seat of early gonorrhœal manifestations than the mucous membranes in general, and, in the cases referred to, changes probably took place in the urethral walls, similar to the erythema, mucous patches, and superficial ulcerations found within the buccal and nasal cavities. These cases, which are rare, have to be distinguished from ordinary gonorrhœa, by the previous history and coexistent symptoms of the patient.

[1] Bumstead on Venereal Diseases, p. 72. Philadelphia, 1866.

If secondary symptoms have recently appeared upon the mucous membranes, and there has been no exposure for a long time previous, the urethral discharge is probably symptomatic. Since the secretions of secondary lesions are now known to be contagious, the discharge in these cases is doubtless so also. It is not susceptible of inoculation upon the person from whom it is derived, nor upon another infected with syphilis, but, if communicated to a healthy individual, will give rise to a chancre.

"Foul promiscuous intercourse," says Druitt,[1] "producing suppurating and abraded surfaces in dirty persons whose health is out of order, will, under some circumstances, generate syphilis. Seventeen galley slaves were inoculated by Mr. Hernandez with gonorrhœal matter, of whom five displayed, subsequently, small ulcers which readily healed. The remaining twelve were either scrofulous, scorbutic, or in ill health, and seven of these suffered from wandering pains and an *eruption upon the skin*."

Fournier,[2] in commenting upon these experiments, explains them by resorting to the hypothesis of a "vicious method of inoculation." It should be said, however, that in a recent and exhaustive monograph on the subject of blenorrhagia, the last-named author makes no allusion to the possibility of a syphilitic gonorrhœa, and discusses merely the question of the discharge which is commingled with the secretion from a concealed or urethral chancre.

I conclude by quoting Egan, who admits that "many cases of gonorrhœa with abrasion of the vaginal mucous membrane, are followed by mild but well-marked secondary symptoms."

Such are, without doubt, the occasional sources of syphilitic infection: and others could probably be adduced, which further researches and the discovery of additional facts might verify. Much is yet to be learned, not only in reference to the propagation of venereal and other contagious diseases, but also in regard to the vehicles by which a virus may be transmitted. To this end the unusual and occasional, as well as the ordinary sources of contagion, require careful investigation.

CHICAGO, Aug. 6, 1873.

ART. VII.—*Some Contributions to Operative Surgery.* By JOS. C. HUTCHISON, M.D., Surgeon to the Brooklyn (New York) City Hospital; Consulting Surgeon to the Kings County Hospital, etc. (With a wood-cut.)

CASE I. *Removal of superior maxillary and malar bones, without external incision, for necrosis due to the fumes of phosphorus; Recovery.*—Jane H., æt. 18, was admitted to the Brooklyn City Hospital January 5th, 1872. During the past four years she had been employed in a match factory, her time being occupied in filling boxes with newly made matches. She had thus, for four years, during many hours of the day, been con-

[1] Druitt's Modern Surgery, Phila. 1860, p. 181. [2] Op. cit.

stantly inhaling the fumes of phosphorus. Toward the close of the year 1870, the last upper molar in the right side was removed for caries; and at its former situation the gum became swollen and tender. During the following eight weeks the seven remaining teeth of the right upper jaw were removed one after another. Meanwhile, a purulent discharge began at the site of the last molar, and from time to time small pieces of bone came away. When she entered the hospital the right cheek and gums were swollen, and the latter were the seat of a slight purulent discharge. The introduction of a probe revealed necrosis of the superior maxillary bone throughout its whole extent, and probably involving the malar bone.

The patient's general condition was good. The treatment pursued consisted in the administration of tinct. ferri. chlor. gtt. x, three times a day, and the injection, twice daily, into the diseased part, of a solution of potass. permang. gr. iij to the ounce of water.

After consultation with the surgical staff of the hospital, the superior maxilla and malar bones were removed in the following manner: The cheek was well retracted by a cheek holder, and an incision made from the right central incisor along the centre of the alveolar ridge back to its posterior margin. The periosteum was separated with periostitome from the anterior surface of the upper jaw around to its junction with the pterygoid process of the sphenoid bone and upward to the malar bone, which also was now found to be dead. This was likewise denuded of periosteum, as was also the floor of the orbit. An incision was then made down to the bone along the transverse palate suture outward to the alveolar process, and another forward along the middle palate suture. The periosteum was now separated from the palatine process of the superior maxilla. The spheno-maxillary fissure was perforated and the broadest part of the malar bone divided directly opposite to the perforation, by a single cut with Isaac's right-angled forceps. The nasal process of the superior maxilla was divided by the same instrument in an oblique direction from the lower termination of the os nasi to the edge of the orbit, leaving the os unguis and the superior extremity of the nasal process of the superior maxilla undisturbed, in order to preserve the lachrymal sac from injury. One blade of the right-angled forceps was then introduced into the right nostril, and the other into the mouth, and the palatine processes of the superior maxilla were separated as far back as the palate bone, by a single cut, and the disunion of the bones concerned was finally accomplished by separating the upper maxillary from the pterygoid process of the sphenoid bone. The jaw was now grasped with a duck-bill forceps, and with a slight twist the whole of the bone (except the upper end of the nasal process) including the orbital plate was readily removed. The malar bone was seized with the forceps and removed in fragments. The periosteum covering the bones was left intact. The palate bones were uninjured, so that the whole of the soft palate was preserved, supported by the palatine plate of the os palati. The hemorrhage attending the operation was considerable, but was easily arrested by stuffing the wound with charpie wet with a solution of carbolic acid (1 part to 120 of water).

There was some febrile reaction following the operation, but it was not excessive, and subsided after a few days. The movements of the eye were perfectly preserved, although there were considerable chemosis and ecchymosis, which gradually disappeared. Deglutition was not interfered with, even on the day following the operation.

The after-treatment consisted in frequently repeated syringings of the

wound with carbolic acid solution, and stuffing it with charpie. The patient improved steadily; the cheek falling in slightly, and the lower lid was drawn down, but not sufficiently so to give her any inconvenience.

March 30. To-day is discharged, cured. I have not seen the patient since she left the hospital, but a photograph taken one year after the operation shows that the only remaining deformity is a slight falling of the lower lid, and this may be remedied if the orbital plate of the superior maxilla should be completely reproduced.

A considerable portion of the upper jaw was removed without external incision, by the late Dr. Alex. H. Stevens, in 1823, for disease of the antrum maxillare,[1] and the same operation was done by the late Prof. Horner, of Philadelphia,[2] but so far as I have been able to ascertain, the case here reported is the only one which the annals of surgery furnish in which the entire upper jaw and malar bone have been removed without external incision.

CASE II. *Excision of the entire ulna for necrosis; Recovery with a useful arm.*—Jane G., æt. 16, the oldest of nine living children, all healthy, never has been sick herself, but resides in a malarious district. Her parents are both healthy; they have lost only one child, who died in convulsions during dentition. The patient waked on the night of Dec. 16th, 1872, with a severe pain in the region of the styloid process of the left ulna; the pain extended up the limb to the elbow in a few days; she says the pain was very severe and deep seated, and that there was no swelling or redness of the external parts for several days.

When Dr. Andrews, of East New York, saw it, Dec. 20, he considered it a case of diffuse inflammation of the cellular tissue. By the 25th an abscess had formed over the styloid process, and had been opened. Several incisions were made at different points for the purpose of evacuating pus.

Jan. 1, 1873. The lower epiphysis separated and came away while the arm was being dressed. The lower end of the ulna became exposed for the length of nearly two inches, so that an operation was deemed necessary.

Feb. 1. The brachial artery being controlled by digital compression, and the hand pronated, a single straight incision was made extending the whole length of the ulno-dorsal margin of the forearm down to the bone. The entire bone was then readily enucleated, leaving the periosteum *in situ*. The olecranon process was separated at the epiphysis and removed separately. Torsion was applied to a single vessel, and the hemorrhage was easily controlled. The edges of the wound were brought together by means of thirteen sutures, and the forearm was flexed upon the arm, and placed upon a rectangular splint.

Some bony matter had been thrown out on the inner side of the periosteum below, and the lower end of the bone had become somewhat thinned in the compact substance. The compact tissue of the upper end was also thinned and absent in parts, and was covered for two-thirds of its circum-

[1] See Velpeau's Surgical Anatomy, with an Appendix, by John W. Sterling, vol. ii. p. 518, New York, 1830; and New York Journal of Medicine and Surgery, 1840, vol. ii. p. 255.

[2] Medical Examiner, 1850, vol. vi., N. S., p. 16.

ference, and two inches in length, by a thick osteophytic layer of new bone. The cancellous tissue of both the upper and lower end of the bone was filled with a thick, tenacious, yellow purulent matter streaked with red lines.

The wound healed kindly, perhaps half its length, by primary union.

March 24. Saw the patient to-day, and found the wound healed, except at upper and lower ends. Dr. Andrews states that during the past two weeks the patient has been suffering severely from rheumatism through every part of her body. It has been controlled in a great measure by moderate doses of potass. iodid.

May 26. Examined the patient's arm to-day. The wound has been entirely healed for some time. A new ulna has been formed, including the olecranon and styloid processes, and the arm is well shaped. There is a fair amount of rotation, extension, and flexion at the elbow, wrist, and fingers, and it seems probable that all the movements of the arm and hand will be in great part restored.

This case began as osteomyelitis of the ulna, with periostitis, terminating rapidly in complete death of the bone. It is usual in such cases to wait for a greater development of new bone before operating, in order to obtain a more symmetrical osseous deposit; but in this case the purulent discharge and pain were so exhausting that it was not deemed expedient to defer the operation, and the well-proportioned arm which the patient now has shows that delay was unnecessary.

The lower end of the specimen, for the extent of two inches, is discoloured, this part having been exposed to the air for some time before the operation. It is also diminished in size, as is shown by a distinct shoulder, which formed where it joined the part that was covered by the soft tissues. (See illustration.) This condition of the lower end of the bone could only be produced by the action of some acid upon this osseous tissue. But whence came the acid? Dr. Squibb has solved the question by suggesting that the exposed end of the bone had probably been acted upon by lactic acid, which is known to be generated by decomposing muscular tissue and pus.

The entire ulna has now been excised five times; once by Dr. Carnochan, of New York; once by Mr. Jones, of Jersey; once by Dr. Williamson. The latter gentleman removed, along with the ulna, the head of the radius and the lower end of the humerus, the patient regaining an excellent use of his arm, wrist-joint, and

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a. Lower epiphysis of ulna separated from shaft.

fingers. In the *Medical Register*, 1852, Dr. Compton reported a case in which he resected the entire ulna, and the radius with the exception of the lower end. There was shortening of two or three inches. The forearm was flexed upon the arm, but was movable through an arc of eight or ten degrees, and the patient had good use of the hand. The case reported above makes the fifth in which the operation has been done.[1]

CASE III. *Removal of alveolar process for neuralgia of inferior dental nerve (Gross' operation); cure.*—Daniel C., æt. 47, labourer, was admitted into the Brooklyn City Hospital September 4, 1871. His general health had always been good. From 1855 until 1867, a period of twelve years, he was engaged in mining in California, and, although exposed continually to wet and cold during this time, was never kept from his work. In the fall of 1867 he began to complain of sharp, stinging pain in the left side of his face. The attacks of pain were paroxysmal, occurring every two or three hours. They increased in frequency and severity until 1869, when the pain became almost constant, and rendered it necessary for him to give up work. During this period the four back molars, of the left side of the inferior maxilla, were removed for the relief of the pain, but the removal of the teeth (which were sound) did not alleviate the patient's suffering.

In the spring of 1871, previous to which time he had been under my treatment for several months, the usual remedies being employed with only partial and temporary improvement; the patient was operated upon in Boston, by the removal of the last upper molar of the left side. The pain ceased, and the case was reported as one of cure in the *Boston Medical and Surgical Journal*, but within three weeks the paroxysms returned as severe as before, and continued so up to the time of his admission into the hospital.

The patient is at present considerably reduced in flesh and strength; paroxysms of intense pain recur every few minutes, rendering him miserable day and night.

September 6. To-day the following operation was performed: An incision, one and a half inch in length, was made along the ridge of the edentulous alveolar process; the periosteum was then separated from the bone by means of a periostitome, and the alveolar process was gnawed off, with the rectangular gouge forceps, to its entire depth, and for a distance corresponding to the length of the external incision. The periosteum was left intact, no sutures were used, and the wound healed rapidly. On the 18th the patient was discharged apparently cured. He was heard from five months afterward, and there had been no recurrence of the pain since the operation.

The point of especial interest in connection with this case is the fact that a cure was effected by the comparatively simple expedient of removing the alveolar process, instead of resorting to the more formidable and not more successful operation of trephining and excising a portion of the nerve.

Velpeau[2] speaks of gnawing, by means of a pair of bone forceps, a

[1] The olecranon epiphysis was lost in the process of cleaning, and does not appear in the photograph.

[2] Velpeau's Operative Surgery (Mott's edition), vol. ii. p. 424.

sensitive granulation at the site of a removed molar of the upper jaw, with a successful result; but the methods recommended for the relief of neuralgia of the inferior dental nerve involve an external incision and trephining, with removal of a portion of the nerve trunk. Dr. Warren,[1] of Boston, reports three cases, in one of which a second trephining gave permanent relief, but in the other two relief was only partial, and in one of these he says: "The enlarged and irregular alveolar process was cut away with bone forceps."

In the *Transactions of the American Medical Association*, vol. xxi., 1870, Dr. Gross, of Philadelphia, has reported five cases of neuralgia of the jaw bones, in all of which the employment of the above operation gave permanent relief to the patients. In all his cases, as in the present one, the bone was very much thickened, and was removed with some difficulty; but, unlike his cases, our patient, though edentulous at the time of the operation, suffered intense pain for nearly two years before the teeth were removed. We are indebted to Dr. Gross, therefore, for calling the attention of the profession especially to this somewhat rare affection, and introducing the comparatively simple operation of the removal of the alveolar process.

ART. VIII.—*On the Use of Arsenic for the Relief of Asthma.*

By COMEGYS PAUL, M.D., of Philadelphia.

MY attention has been directed to the means of relief or the curability of asthma for several years, during which it has been my privilege to observe numerous cases, both at Charity Hospital and in private practice, which I have watched with a peculiar interest. A thorough sympathy for this class of unfortunates has induced me to make experiment of nearly all the drugs recommended by good authorities. The beneficial effects of many of them are confined to a limited number of sufferers. Some certainly afford palliation, imperfect though it may be, while few can be said to exercise any influence for good after the exacerbation has passed. As a prophylactic no particular remedy can be confidently recommended, but from my own experience, I am able to advocate the use of *arsenic* as affording more satisfaction than any one drug that I have made trial of; indeed, I am inclined to think that it is the remedy "*par excellence*," not only for the mitigation of spasmodic asthma, but also, as a reliable prophylactic.

It will not be denied that pure uncomplicated asthma, as distinguished from emphysema and dyspnœa, resulting from cardiac diseases, is occa-

[1] Surgical Observations, with Cases (J. Mason Warren), pp. 472–75.

sioned by the spasmodic contraction of the muscular fibres of the smaller bronchial tubes, diminishing their calibre, and forming a mechanical obstruction to the pulmonary respiration. From the absence of anatomical lesions after death, and from the suddenness of the attack and its quick subsidence, we know that it is not of an inflammatory nature, and are led with much certainty to regard it as of purely nervous origin. Therefore, when it is not connected with bronchitis, should we not, with much reason, rely entirely upon drugs which are known to affect the nervous centres? If we except cases caused by indigestion, I am confident that arsenic, properly given, will afford much relief. We are convinced of its action upon the nerves by their diminished susceptibility to the influence of galvanism. This specific power is also inferred from the impaired sensibility of the extremities, trembling of the limbs, and symptoms of paralysis. Of its influence upon the respiration, its power of diminishing reflex irritability and increasing lung power, enabling those addicted to its use to undergo fatigue from over-exertion, such as rapid locomotion or climbing a steep hill, without "loss of breath," we have abundant evidence. That it has a direct control over the nerve supply of the smaller bronchi, I will endeavour to show further on by citing cases that came under my own observation. The peculiar excellence of belladonna as a sedative in asthma, I believe to be similar in its action to that of arsenic, by its diminution of reflex irritability; for which property Dr. Hyde Salter has so highly recommended it. Arsenic is superior to belladonna in this respect, because of its more lasting effect, and the absence of the disagreeable symptoms produced by the vegetable sedative, such as impaired vision and dryness of the throat.[1]

The reason that arsenic has not become more established as an efficient agent for the relief of the great majority of uncomplicated cases of this disease, is because of a want of persistence in its administration, until very apparent signs of a constitutional effect are produced. To be efficacious it must be pushed until it gives decided evidence of its presence in the patient's system. Iodide of potassium will not influence an obstinate case of specific or subacute rheumatism, unless we give quantities sufficient to produce the condition known as iodism; nor will quinia cure malarial disease if its presence is not shown by sensations peculiar to its therapeutic action. How then can we expect benefit from the use of *arsenic* in any of its forms unless it is *thoroughly* tried? The remedy suitable to the majority of cases I believe to be *arsenic*, and from my pleasant experience with it, I am now induced to bring it again before the notice of the profession, and to solicit for it a fair trial. My success in cases of ordinary asthma,

[1] That arsenic controls, to a degree, abnormal action of the motor nerves is attested by excellent authority; Drs. Meigs and Pepper, Romberg, Begbie, Flint, etc.

and even in cases which at first might seem intractable, has been so convincing to myself, that I now place it first in importance upon the list of remedies. I have seen it relieve sufferers after all the other recognized drugs have failed. Cases that did not yield in the beginning have done so by a continuation of its use, assisted by medicine to counteract indigestion, bronchitis, etc. I have arrested an excessive dyspnœa, resulting from an aggravated attack of asthma, almost instantaneously by the use of Fowler's solution hypodermically. By instantaneously, I mean, with the same rapidity that a proper dose of morphia, similarly given, will relieve pain. Moreover, cases so treated have had no tendency to a recurrence of the dyspnœa for several days after the administration. The dose used in this way was generally from ten to fifteen minims. However, it is not my intention to recommend the hypodermic use of this potent agent for good or evil until it has been used in other ways, as it is sometimes accompanied with unpleasant consequences. Generally it causes a sensation of stinging pain, followed by a degree, more or less, of loss of nerve power in the immediate vicinity, which may continue from a few minutes to several hours. If this feeling keeps up for any length of time, it may cause a serous infiltration of the part and some external cutaneous congestion, but I have never known it to develop an abscess except in individuals particularly susceptible to such a result when morphia had been injected. It is but right, while mentioning these objections, to state that it has also been thus administered without any of the above disagreeable occurrences, except a trifling stinging sensation of a few minutes' duration. During an exacerbation, when stramonium, nitrate of potassa, chloroform, etc., have failed to give relief, arsenic, hypodermically administered, may be confidently tried.

As a prophylactic, the liq. potas. arsenitis should be given in five-drop doses three times a day, to be increased or diminished as symptoms may indicate. If nausea, or indigestion, or slight diarrhœa follow its use after a few days, we must be content with three drops at a time until the stomach shall begin to tolerate it better, when the dose should be increased. In all cases let a sufficient quantity be taken to fall short of producing nausea, but if diarrhœa alone should result, the dose need not be diminished, but combined with opium. This treatment should be pursued until slight pain in the head, congestion of the conjunctiva, and œdema of the lower eyelids may warn us that its physiological effects have been attained, but it should not then be abandoned, but continued in smaller quantities given with less frequency. Care should be taken that arsenic be not allowed to come in contact with an empty stomach. When taken directly after a meal, by commingling with the food it is less likely to set up a gastric irritation, and for the same reason it is more easily assimilated. When the patient is suffering at the same time with anæmia, or any wasting disease, it may be combined advantageously with the citrate of iron and

quinia. Ordinary cases of asthma will generally be influenced by this treatment in the course of three or four days. Bad cases of years' standing have commonly yielded their frequency and violence after three days, and very seldom are any entirely unbenefited after a week's exhibition. When given before the commencement of an autumnal catarrh it will often prevent its onset, and the exceeding discomfort attendant upon this form of asthma can be controlled so long as the remedy is persisted in.

Fowler's solution is perhaps the most convenient form of administering arsenic, but it is not without its objections. Its strength and efficacy are often changed by the long-standing of the preparation upon the shelves of the pharmaceutist, as is clearly evinced by the delicate metallic film that sometimes covers the sides of the bottle, and by its want of effect when given in even large doses. The taste of lavender with which the arsenite of potash solution is combined, is often unacceptable to the patient, and nausea may undoubtedly be sometimes attributed to this cause.[1] A fresh solution prepared without lavender should have the preference.

Not to occupy too much space, I will append only two cases as examples of the efficiency of arsenic, as I have witnessed from personal observation.

CASE I.—C., aged 27 years, American, first began to suffer from asthma six years ago. Found nothing to relieve him after it became fully developed. Was frequently awakened at two or three o'clock in the morning, with excessive dyspnœa, and the attack seldom abated until after breakfast. Whenever he had bronchitis, the laboured breathing entirely unfitted him for attendance upon his ordinary occupation. He was much distressed by the great exertion required to obtain breath. He has tried iodide and bromide of potassium, stramonium, tobacco, tartar emetic, and various other remedies, with small relief. In the fall of 1872 he did not pass one night of entire rest, during the last part of August, the whole of September, and the first half of October. He became pale, anæmic, and lost flesh. By my recommendation he began to use Fowler's solution in five-drop doses three times a day, and also a tonic of iron and quinia. Before a week had elapsed he experienced a great change. His nights were passed in almost uninterrupted sleep, and in a short time he was so entirely relieved that he said he felt as if "he could not have asthma if he wanted to." After discontinuing the medicine he only felt a slight attack at long intervals, and passed the following winter in comparative comfort, having

[1] Thos. Hunt, F.R.C.S., Surgeon to the Western Dispensary for Diseases of the Skin, says: "Arsenic will be found, in a smaller or larger dose, to agree with every individual, provided it be properly prepared, and taken with the utmost punctuality. Young children bear it very well, and girls about the age of puberty generally bear and require larger doses than adults of either sex. The red lavender tincture, which for some foolish reason is ordered to be mixed with it, often becomes stale and nauseous, and the patient says the arsenic makes him sick. Pain in the stomach and bowels, depression of spirits, and general nervousness seldom or never occur in dispensary practice, when the patient knows nothing of the medicine he is taking."

gained in flesh and strength during the interim. In August, 1873, he was again unable to sleep, and endeavoured to get through a night by inhaling chloroform. Only transitory relief could thus be obtained, and it was often necessary to repeat the chloroformization five or six times before morning, when he would arise with a severe headache and feel much depressed during the day. Not only was he so affected by night, but he would have days in which he was totally unable to carry on a connected conversation, for want of sufficient breath. While in this condition I gave him arsenic in quantity to produce very slight nausea, and relief resulted within three days. At one time when he had not been taking medicine for several weeks, a sudden attack of dyspnœa came upon him with such power, that with difficulty he was able to walk several squares to his residence. A hypodermic injection of Fowler's solution gave him almost instant relief, and he had abundant time to become arseniated in the ordinary way, before the effect of the injection had passed. When taking arsenic he expresses himself as being entirely well, and he improves in his physical condition. Being also subject to autumnal catarrh, he has been relieved equally speedily and perfectly by this remedy. His respiration is now so good that he habitually walks six or eight miles nearly every day without inconvenience.

CASE II.—Robert B., aged 25, Irish, labourer, has been in this country eight years, and during the entire period he has been a confirmed asthmatic. He is subject to aggravated attacks at any time, but he cannot say that they are more severe in the fall or at all influenced by vegetation. Has been frequently confined to his bed by them, and often was unable to remain in a recumbent position. They have very generally been accompanied with a spasmodic cough with scanty expectoration. At various times he has been under treatment, but he seems to have been but slightly relieved. October 11, he came under my care at Charity Hospital, and was ordered Fowler's solution combined with syrup of squills. I saw him the following Wednesday, and found him much improved. He now (Nov. 12) says that "he never felt better since he has been in this country." He sleeps well, has a good appetite, and feels much stronger.

ART. IX.—*On some of the Uses of the Knees and Elbows (all fours; à la vache; quadrupedal?) Position.* By F. A. BURRALL, M.D., of New York.

EVERY now and then critical cases are reported in the medical journals in which a favourable issue has been determined by placing the patient upon elbows and knees. It is not probable that in all these instances the patients referred to have been placed literally in that position, often they have more likely been upon what might be called "all fours," in which event the usual term might not be strictly applicable. Yet the title of "elbows and knees," as applied to the posture in question, conveys an idea of the attitude of the patient which is sufficiently clear to be readily under-

stood. Perhaps the term "*quadrupedal*" might be substituted, as classical, brief, and descriptive. The posture, as described by Dr. Marion Sims in his valuable work on *Uterine Surgery*, seems, with trifling modifications for particular cases, best adapted to secure all the attainable advantages of this manœuvre. He is writing of the introduction of his speculum, and after adding that he "rarely resorts to this method now," thus speaks of placing his patient upon her "knees":—

"Place the patient on a table on her knees, and bend her body forwards till the head is brought down to the plane of the table, where it may rest in the two hands, its weight supported on the left parietal bone, while the elbows are thrown widely from the sides. The knees are to be separated eight or ten inches: the thighs are to be at about right angles with the table; thus the plane of the table, the axis of the thighs and that of the body would form a right-angled triangle, of which the thighs and table would make the right angle, and the body the hypothenuse. The patient must be taught to maintain unflinchingly this position; she must not pitch forwards and make the pelvian angle obtuse, nor draw the knees up under the body, making it more acute; she must not arch the spine upwards, for this brings into forcible action the abdominal muscles, which should be perfectly relaxed, with the spine rather curved downwards, as we see it in sway-backed animals. With these precautions fully impressed on her, she is to breathe easily and relax the muscles of the abdomen. In consequence of this position quietly retained for a few moments, the movable abdominal and pelvic viscera necessarily gravitate towards the epigastrium."

This position may be modified by placing the knees together, thus relaxing the adductors of the thigh, or by directing the patient to free the lungs of air as much as possible, when, in consequence of diaphragmatic contraction, the area of the abdominal cavity is increased.

Of course it is not claimed in this article that the advantages of this position are not acknowledged by medical men to a considerable degree. On the contrary, it has been prominently brought forward by some, for special indications; yet my own observation has convinced me that it is often overlooked in general practice, whereas it should always be kept in mind as a valuable resort. We are accustomed to think of our patients as lying upon back or side when confined to their beds, and then the force of gravity is acting in a direction opposite to these positions; now by changing these, the action of gravity may be reversed, and sometimes with decided benefit. Thus an open abscess or a suppurating wound may by position become either a cavity dilating with increasing purulent secretion, or contracting in consequence of a free discharge of fluid.

As gravity is the agent on which the freedom of discharge depends, so to the same attraction are mainly due the advantages of the "all fours" position. Besides the effect of gravity, however, there are other results. The warm air in the intestines, in consequence of its comparative lightness, passes backward towards the anus, and, as a consequence of the relaxation of those muscles which pass from the anterior portion of the trunk to the femur, it is fair to conclude that there is diminished tension in those parts adjacent to the abdominal rings.

It has been claimed that atmospheric pressure has a share in the uses of this posture when employed for uterine examinations.

"If the surgeon will get immediately behind his patient and lay his hands on the nates, and push them gently upwards and backwards, taking care that her position is not changed, he will see the mouth of the vagina open and, at the same moment, hear the air rush into it with a hissing sound; and then, if he will, with even his finger, raise the perineum up towards the os coccygis, he will see the vagina distended like an inflated bladder. If, however, he will use my speculum instead of the finger, the cavity of the vagina will be more easily seen.

"If he will now remove the instrument (or finger) and allow the mouth of the vagina to close, and then if he will let his tired patient fall over on her side, he will have audible and unmistakable evidence of the sudden escape of air from the vagina.

"The object of this speculum (whether used with the patient on her knees or on the side) is to elevate the perineum and to partially support the posterior wall of the vagina; the *pressure of the atmosphere* with the gravitation of the viscera does the rest."—*Uterine Surgery*, p. 14.

It is really worthy of careful consideration whether the above phenomena are due to atmospheric pressure. It certainly seems fairly demonstrated that the cavity of the vagina is enlarged while the body is supported on elbows or hands and knees, but is not an effect mistaken for a cause when it is claimed that this dilatation results from the pressure of the atmosphere? Although philosophy teaches us that there is a pressure of fifteen pounds to the square inch all over the surface of the body, it also teaches that this pressure is from within outwards as well as from without inwards, otherwise death would be inevitable from impossibility of respiration if from no other cause. If the abdominal cavity were a vacuum, then atmospheric pressure from without would act with immense force in whatever position the body might be placed, but as the abdominal cavity is not a vacuum and this pressure acts equally in all directions, it seems to me that its agency in producing dilatation of the vagina must be denied.

But how then may we account for the dilatation? I have been enabled by the kindness of Dr. John G. Curtis, Demonstrator of Anatomy at the College of Physicians and Surgeons, New York, to ascertain from the cadaver that traction on the rectum, bladder, or uterus will also produce traction on the vagina. These organs are all, as is well known, closely united by means of that fold of peritoneum, which, passing from the rectum, envelopes a large portion of the external surface of the uterus and bladder. This being premised, the following seems a simple explanation of the dilatation of the vagina when a patient is placed upon hands and knees. The uterus and bladder fall forwards, and as the anterior wall of the rectum is comparatively movable, that may also, aided by the weight of the uterus, follow the same course. As a result of traction upon the vagina, the cavity is elongated and enlarged, and the contained air rarefied.

When the vagina is partially opened, the air "rushes in with a hissing

sound" to fill the enlarged cavity, although seeming to dilate it. As the patient assumes again an ordinary position, the air which has entered is forced out by the descent of the pelvic viscera.

I have written rather minutely with regard to the dilatation of the vagina by air when a patient is on elbows and knees, for the subject seemed one of considerable interest from a scientific point of view, and I have not been satisfied with the explanation which is based on the action of atmospheric pressure. Perhaps more might be learned on this point, as well as on others connected with the changed relations produced in the body by this posture, from a study of a vertical section of the frozen cadaver placed on elbows and knees.

Although some of the effects of this posture are still in obscurity, we may regard it as pretty well determined that it is of much value in removing pressure from pelvic organs and, to a certain degree, those of the abdomen. No position favours the injection of air or water into the bowels to the same degree as this.

In 1867 I was attending a patient who suffered from a purulent rectal discharge connected with the presence of several strictures. One of these was far up the rectum. For the purpose of diminishing this discharge I concluded to wash out the intestine with a solution of carbolic acid. In using a long elastic tube I found it difficult to introduce it satisfactorily, but, placing the patient on his elbows and knees, the tube was passed far up the bowel and the solution poured into it from a small pitcher. The discharge of pus was not much modified, yet the operation was greatly facilitated by the position.

Dr. Lambl, of Charkow, has written as follows with regard to the uses of this posture in cases of intussusception.[1]

"As there is much difference of opinion among practitioners concerning the advantages of surgical and medical treatment in cases of internal incarcerations (inneren incarcerationen), it seems fitting to refer to a method hitherto unnoticed, which is, I believe, especially in recent cases, worthy of trial before resorting to severer measures. I have seen good results in three cases accompanied by symptoms of internal obstruction: in one of these, that of an elderly woman, croton oil and irritating enemata had been used on the first two days; at the consultation on the third day, in which I took part, the use of metallic mercury was suggested. surgical interference was mentioned, and an operation would probably have been performed had not a trial of the method which I proposed been promptly followed by a favourable issue.

"This method consists in causing the patient to rest upon elbows and knees with elevated pelvis (*à la vache*) as long as possible, while at the same time the abdomen is gently stroked with both hands from the hips to the umbilicus. The result is surprising, and I explain what seems to me the mechanism of this manipulation in the following manner. Incarceration, whether resulting from a simple twisting of the intestine, or from the formation of intestinal knots, results, on the one hand, from strangulation by the fan-like fold of the mesentery, and, on the other, from the arrest of peristaltic action in those portions of the gut about the point of constriction. While the patient lies in the usual horizontal position, on the back, the solid and fluid contents of the intestine

[1] Virchow's Archiv. Bd. lxv. s. 119.

naturally remain below, while the gaseous is above, and the gut and mesentery are fixed immovably. In order to relax the constriction the relations of the parts must be changed, the more solid contents being diverted towards the anterior, and the gaseous to the posterior part of the bowel. This may be accomplished by the position of the abdomen. With relaxed abdominal walls, there is an increased area for the intestinal folds and the mesentery is proportionately drawn into the normal median plane. Thus may the strictured gut unloosen itself, the mesentery unfold, and normal peristaltic action ensue."

In the *Transactions of the New York State Medical Society* for 1872 is a very interesting paper by Dr. Stephen Rogers, of New York, on intussusception, with references to many authorities on the subject. Dr. Rogers narrates cases which have come under his observation, in which the above posture was used persistently, and repeated injections of warm salt and water administered, with happy results.

This position was also of service in a case of stricture of the rectum seen December 1, 1872, with Doctors Forrester, McLeod, and Stimson.

The patient was an unmarried American woman, 40 years of age. In the previous spring she had suffered from dysentery, which lasted about two months. Her bowels became irregular after this attack. Ten days before the illness, which occurred in December, she was seized with pain in the epigastrium, and took, with some relief, a powder containing bismuth and morphia. There was one movement of the bowels after the powder, and then ensued constipation, which did not yield to the active use of purgatives and injections. Much tympanites was present.

An examination of the rectum and vagina disclosed an annular stricture of the rectum which could be felt at the tip of the index finger by introducing it as far as possible. Patient was examined on elbows and knees, on her back, and while lying on her left side with the knees drawn up and the hips elevated. The upper portion of the intestine, which was dilated, seemed pressed into the lower, and the stricture gave to the touch the sensation of internal hemorrhoids, or, to use the comparison of Dr. Macleod, the toes of the fœtus ("baby's toes") as felt in the gravid uterus. The vagina and womb seemed normal, excepting that the womb was retroverted. A gum-elastic catheter, about No. 10 in size, was introduced into, but not through the stricture. Fluid feces began to pass that night, but although attempts to pass the catheter through the stricture were made daily, they were unsuccessful until Dec. 4, when a small injection of olive oil was thrown into the bowel above the constriction, which was apparently 1½ inch in length. The pulse, which was 120 on Dec. 1, had fallen to 90 by the 5th, when pultaceous feces began to pass with considerable freedom, and in large quantities, five chambers full being voided within two days. The patient was kept upon her left side with knees drawn up and hips somewhat elevated, a position bearing some analogy in its effects to that of the elbows and knees, and which favoured the passage of flatus.

A gradual restoration to her usual health followed. I do not know the present condition of the stricture, as when I last saw patient she was averse to an examination.

The elbows and knees position was useful in this case, both for making examinations, passage of instruments, and administering injections.

I think I have found this position useful as an aid in the reduction of strangulated hernia. It would seem *a priori* as if the traction caused by

the falling forward of the intestines when in this position, the relaxation of the muscles near the abdominal rings, and the relief of congestion of the gut, which might be supposed to arise from the elevated pelvis, would favour the reduction of the bowel. I can, however, give but one case in which the manœuvre was followed by a return of the intestine, although I found the tumour soften in a recent case after the use of this method. In a case of strangulated femoral hernia, in which I tried this manœuvre, in 1870, I found it of no avail.

The case in which this method was followed by reduction occurred several months since, and was that of an oblique inguinal hernia in a blind man, æt. about 60. He had first observed the hernia three years previously, after lifting a set of drawers, and then a truss was applied. At date the intestine came down while patient was taking a warm bath, and became strangulated. He was seen at 12 M. by his physician, and an unsuccessful effort made at reduction. Iced water cloths were applied, and I saw him at 10 P.M. The tumour was tense and about as large as a hen's egg. There was some vomiting, but little abdominal tenderness. I attempted taxis with patient's knees bent and thighs flexed upon the abdomen, but without result. I then placed him upon hands and knees and repeated the attempt. Although the tumour did not return entirely while he was in this position, yet it seemed to me that it first began to yield while he was thus placed, and on putting him once more upon his back the intestine was easily reduced.

Dr. C. K. Briddon, of New York, informs me that he was recently sent for by Dr. John Howe to see with him a case of strangulated hernia. Dr. Briddon went prepared to operate, but at the consultation Dr. Howe proposed to attempt taxis with the patient on "all fours." The suggestion was adopted, and the intestine reduced with comparative ease.

It is hardly necessary to refer to the advantages of this posture in the reduction of prolapsed fundis, since it has been prominently brought forward by the eminent Professor of Obstetrics in the College of Physicians and Surgeons, New York, Dr. T. G. Thomas, and has met with much favour.

There is considerable interest connected with this adaptation of postural treatment, since it seems to be one of those instances which are not very uncommon in medicine, in which an obsolete and valuable remedy is rediscovered, the discoverer being unaware of its previous existence.[1]

Dr. A. Hadden, of New York, reports a case in the New York *Medical Record* of Aug. 15, 1866, in which, the cord being prolapsed and an arm presenting, the patient was placed on elbows and knees, the funis reduced, and then a successful version accomplished "without much difficulty." The writer adds: "This position of the patient will, in my opinion, be

[1] For a historical *résumé*, by Dr. K. F. I. Birnbaum, of the plan of replacing the cord by putting the woman in the knee-elbow position, see *Am. Journ. Med. Sci.* for April, 1868, p. 550, and *New York Medical Journal* for January, 1868, pp. 371–4.

found to render pelvic version easier when required to be done by introducing the hand into the uterine cavity."

For the replacement of prolapsed hemorrhoids and rectal prolapsus, the advantages of this position are at once apparent, and since the warm air of the intestine tends toward the anus when the patient is on knees and elbows with elevated pelvis, this posture suggests itself as useful in cases of colic connected with excess of intestinal gas.

There are many other uses of this posture which will occur to the practitioner if the indications which it fulfils are not forgotten. This paper is intended to bring prominently forward the advantages of a resource which is frequently overlooked, but is not a compendium of all its uses. Like Ophelia's rosemary, it is "for remembrance."

Whenever we wish to reverse the usual action of gravity upon the contents of the abdomen or pelvis, or to remove from the pelvic organs the ordinary pressure of superjacent viscera, this posture should be borne in mind.

Art. X.—*Description of a New Forceps.* By Alex. McBride, M.D., of Berea, Ohio. (With four wood-cuts.)

To alleviate and abridge human suffering and to increase the sum of human life are the cardinal objects of the physician's labours. Dr. Paul Chamberlain, by his invention of the obstetric forceps, made a notable advance towards these objects; and whoever improves this instrument so as to extend its usefulness makes some advance in the same direction. This I have endeavoured to do by attempting to make the instrument less objectionable in appearance, more easy of application, and diminishing its liability to do harm.

All, or nearly all, the forceps which I have seen seem to me to possess one or more of the qualities of frightfulness, awkwardness, inefficiency, or destructiveness.

The first object I had in view was to divest the forceps of their uncouth or frightful aspect. To accomplish this the instrument must be shorter, lighter, and present a less "martial"[1] appearance. The handles could not consistently be shortened and maintain the same length of shanks, and shortening of the latter was not admissible unless a joint or lock could be contrived which was not liable to pinch. At this point my labour began. To effect that object I have contrived a convenient and secure lock which cannot pinch under any circumstances. I have reduced the shanks to two

[1] A much venerated teacher, before proceeding to demonstrate the long forceps, always expressed regret that the instrument had such a "martial appearance."

inches, the handles to three and a half inches, thus making an instrument, the entire length of which, in a right line, is 11¼ inches, capable of being used at the upper strait. To this I have added adjunct handles which, when used for difficult cases, increase the entire length to 15¼ inches.

The next point to be attained was to produce a blade with all the facility for grasping and traction which pertains to the best instruments in use, such as Davis's and Hodge's, and to lop off redundancy, all that might interfere with its perfect ease and safety of application. Now, when traction is made, no part of the instrument touches the head except that portion of the blades which is forward of the point of greatest expansion. Hence it is plain that no width of blade posterior to that point can make any difference in the safety and facility of extraction or firmness of hold. But it is easy to comprehend that a considerable width of this portion of blade may interfere seriously both with the safety and ease of introduction. With these views of the case, I have given my blades ample width (1⅜ inch), from near the tips to a point 3¼ inches from the tips, in a right line, and from this point they rapidly decline in width to the shanks. This wide portion of the fenestra admits of the protrusion of the parietal protuberances, retaining all the advantages of the wide blades of Davis and Hodge, and discarding the disadvantages of their width of heel portion. The length and cephalic curve of this portion of the blades are such that the tips can never endanger the perineum by extending beyond the chin, their maximum extent being 3¼ inches from the parietal protuberance, which can never reach the chin.

To improve the pelvic curve was another point of consideration, so that when the blades are on the head at the upper strait, the shanks or handles shall be in the centre of the os externum. The reason for this is twofold: first, the better to preserve in the mind the position of the head, and the true line of motion; second, to avoid the pressure of the handles against the perineum, and in many cases to avoid the necessity of moving the patient from her dorsal position in bed. To accomplish this I have commenced the pelvic curve at the joint, so that the axial curve is uniform from the joint to the tips of the blades, thus increasing the length of the ordinary curve two inches, and rendering the curve of the blade more gentle than in many instruments; this has the effect to throw the handles more forward, and in effect to increase their length about one inch. The curve is an arc of a circle whose radius is nine inches, projected from a line perpendicular to the joint, and supposed to be very nearly the average curve of axis of pelvis. With these conditions the short instrument can be easily applied at the upper strait and give sufficient projection of handles to afford a good hold.

But to provide for those cases in which much leverage, traction, or rotation is required, I have provided supplemental handles. When these are inserted we have a veritable long forceps of about the usual length, each

branch as firm as if it were one solid piece. And here I have innovated; the adjuncts curve downward nearly as much as the blades curve upward; at least the point of traction near the end of adjunct is about the same distance below the joint, or axis of the handles, as the point of resistance is above (which is a point about 1½ inch forward of the point of widest expansion). This arrangement gives us the advantage of making traction directly in the line of motion during the entire passage of the head, without distracting the attention or requiring a hand to make downward pressure on the shanks or handles. Another advantage of the downward curve is that it affords a lever of three inches in length for rotation; this peculiarity of the instrument pertains to no other in use, Hodge's handles curving downward in only a slight degree.

We have, then, in this instrument, all the advantages of both a long and a short forceps, without the disadvantages of either. The short instrument has the advantages of lightness, portability, mildness of appearance, and in its application does not confuse by length and weight of handles. The long instrument has the single advantage of greater power. My short instrument will answer in all cases not requiring great power of traction or rotation. It is my method to begin all operations with the short instrument; then to attach the adjuncts when required. They can be inserted in less time than is required to take from the pocket and put on a pair of spectacles.

It is not my design to criticize other forceps, but the observer will perceive that the length of the blade and cephalic curve are such that when the head is grasped (3½ inches), the tips will approximate to 1¾ inch, and will be nearly ½ an inch from point of chin. The measurement of width of chin is about 1½ inch; therefore this instrument will hold more firmly than one whose tips are 2 inches apart when the head is grasped. The more accurate the fit, the less pressure is required for extraction.

My instrument when short has a grasping or crushing power, as compared with Hodge's instrument, of .737 to 1.172, being less. When long, as 1.473 to 1.172, being more; but as it has a crushing latitude of only ½ inch on the average head, no inconvenience or damage can result from this cause. Hodge's instrument has a crushing latitude of 1 inch, its width, when closed, being but 2½ inches.

Some practitioners may fail to perceive the full importance of having the forceps dual, or short and long. I think with the truly humane it must ever be a maxim to not only spare the patient all unnecessary danger and physical pain, but all mental and moral shock; hence, the less alarming the appearance of the instrument, the better. And if the maxim of Hodge be acted upon, that "the forceps ought to be applied and used without the consciousness of the patient," the instrument of 11¼ inches length and 11 ounces weight could be concealed more easily than one of

16 inches and 17 ounces. The adjuncts can be added without bustle or noise.

The teachers from whom I derived my early maxims in obstetrics rather discouraged the frequent use of forceps, and with some reason, when we consider the kinds of instruments that were in use thirty years ago, also most of those in use now. But I think if this instrument were in the hands of every practitioner, they would overcome their timidity of using forceps, and a vast amount of suffering would be spared. The instrument itself has no injurious property; the only conditions necessary to make its use entirely safe are, that there shall be sufficient relaxation, and that the head shall properly present.

The blades and shanks being so nearly of the exact curvature of the pelvis, and this curve extending clear to the joint, there can be no uncertainty as to the direction for traction; all one has to do is to move the blades in the line of their own curvature, and it is the same whether the instrument is used long or short. When the adjunct handles are used, they antagonize the upward curve of the blades so exactly that full tractile force can be exerted in the exact line of motion.

The construction of the shanks, joint, and handles, differs from other instruments in this: that the shanks and handles are about $\frac{5}{32}$ of an inch apart, and touch each other nowhere except in the socket and at the end of the handles; thus, pinching is impossible. The joint has all the facility for junction and disjunction of the English joint, and all the security of the German or French. I have used the instrument nearly two years, both at lower and upper strait, and find it to answer fully my expectations. It will rarely be necessary to change the position of the patient in bed from the dorsal.

Measurements.—The figures represent the instrument.

Figure 1. Length, *a*, *b*, 11¼ inches in right line; *a*, *c*, 6 inches; *a*, *d*, 3¼ inches. Width, *e*, *f*, 3 inches. Shanks, *c*, *g*, 2 inches. Handles, *g*, *b*, 3½ inches. Between tips, *h*, *h*, $\frac{7}{8}$ inch. Thickness of limb at *e*, *f*, $\frac{5}{32}$d of an inch. Distance between handles at joint about $\frac{5}{32}$d of an inch.

Figure 2. Length, *a*, *b*, in right line 15½ inches; *a*, *c*, 6 inches; *a*, *d*, 3¼ inches. Width, *e*, *e*, *e*, *e*, 1⅞ inch. Width of limb $\frac{3}{8}$ inch. Width of fenestra 1½ inch. Limbs bevelled on outer edge of pelvic surface.

Figure 3. Adjunct handle, same as *f*, *b*, Fig. 2.

Figure 4. Opposing face of adjunct handles, showing mode of locking. The highest point of tips rises 3½ inches above axis of handles.

The points of advantage claimed for this forceps over all others, leaving all the old short forceps out of the question, are,

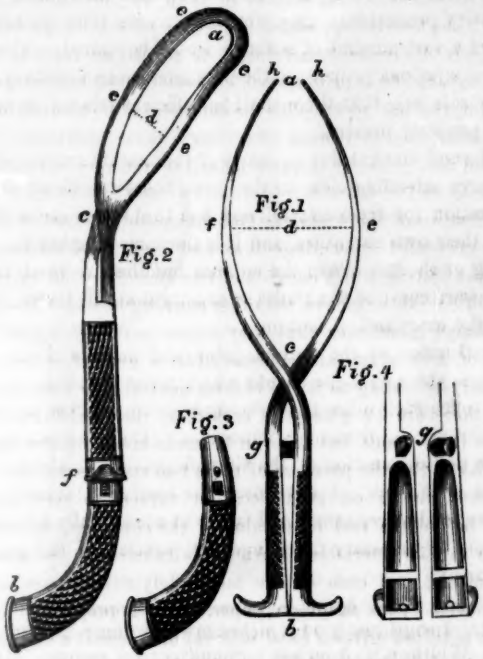
1st. More easy of introduction and application to the head by reason of the improved pelvic curve, the shape of the blade, and the absence of long and heavy handles.

2d. Facility for making traction direct in line of motion.

3d. Facility for rotation by reason of downward curve.

4th. Entire exemption from pinching, either by joint or shanks.

5th. The proper length of anterior portion of blades; the absence of unnecessary width or thickness of any part of blades, and the perfection of pelvic curve extending from joint to tips; rendering it less liable to do harm.



6th. Less frightful or momentous in appearance; the short form being the only one brought to view of patient or attendants. (It is as necessary to conserve the equanimity of attendants as patient.)

7th. More conveniently portable.

8th. Facility of joint for locking, unlocking, and security.

9th. The shortness and lightness of the handles (in the short form, which is always used in introduction) give a finer sense of touch and direction of blades.

ART. XI.—*A New Modification of the Ophthalmoscope.* By ED. G. LORING, M.D., of New York.

SINCE the introduction of the ophthalmoscope which I presented at the American Ophthalmological Society in 1869, various modifications of the instrument have been made, which it appears to me have added but little, if anything, to its general usefulness, or tended to fulfil in any greater degree the objects of the original, which were to facilitate examinations by the upright image, and to expedite the determination of errors in refraction; while, moreover, the coarseness with which these instruments have been made abroad has gone far towards defeating the very purposes for which they were intended.

At the meeting of the American Ophthalmological Society for this year, Dr. Knapp presented a very ingenious and beautifully made modification of the Rekoss system, which consists of two stationary but revolving disks, one of which contains concave, the other convex glasses. These are superimposed in such a manner that they rotate past each other, so that the focal value of each glass can be lessened to a greater or less degree (but not increased) by adding to it the various neutralizing glasses of the other disk. As there are 12 glasses in each disk, the focal value between the glasses is in itself small, but this can be made much smaller by the use of the other disk. But the presence of these two stationary disks necessitates (unless indeed one is on each occasion turned to zero) an elaborate calculation before the real focal value of the combination before the observer's eye can be determined. And this calculation in case of all the weaker numbers, and even of the moderately strong ones, can only be carried out even by an adept on paper, or by a prepared table, and the result when obtained gives a focal interval of so small a degree as in most cases to be entirely inappreciable even to the most proficient expert. In order to use any of the commoner occurring numbers without going into this calculation, one disk must be always turned to zero, while the required number is sought by revolving the other. Dr. Knapp's instrument, like that of Wecker's, has the advantage of being complete in itself and free from the disadvantage of having detached cylinders.

To obtain this advantage, and at the same time to keep the primitive simplicity of my old instrument, the detachable cylinders have, in the modification which I now present, been replaced by a single stationary disk which is only one and a half inches in diameter, and in which the glasses are arranged in two concentric circles. The manner in which the glasses are arranged will be seen from the figure. The disk contains 25 perforations, forming in the aggregate the following series:—

Convex, O. $\frac{1}{48}$, $\frac{1}{24}$, $\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{10}$, $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$.
Concave, $\frac{1}{48}$, $\frac{1}{24}$, $\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{10}$, $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$.

The intervals between the focal lengths of these glasses are small enough to fulfil every requirement in ophthalmoscopy, without the perplexing resort of adding and subtracting vulgar fractions with comparatively high

Fig. 1

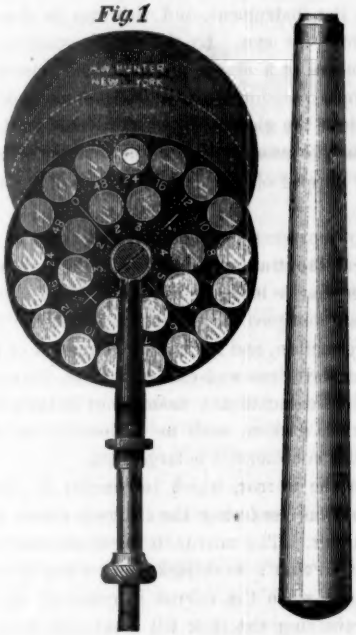


Fig. 2

denominators. If required, however, it is very easy to vary the focal interval in all the stronger, and in many of the moderately strong glasses, that is, from $\frac{1}{2}$ to $\frac{1}{10}$. This is done by the observer simply withdrawing his head half an inch from the ordinary place of examination. If, for example, it is found that in the usual place $-\frac{1}{2}$ in a given case is too strong, the head has only to be withdrawn one-half inch, and the glass has then the effect of $\frac{2}{2\frac{1}{2}}$. With $\frac{1}{3}$ it becomes $\frac{1}{3\frac{1}{2}}$, and so on through the series. So, too, with the convex glasses; only here the glass increases in strength as we withdraw the head. Thus if we find that $+\frac{1}{3}$ is not quite strong enough in a given case, we have only to withdraw our head half an inch and the glass has the same effect as $\frac{1}{2\frac{1}{2}}$ would have had if the head had not been moved. Thus, with little or no inconvenience a large number of additional focal values, with small intervals of refraction, can be obtained. The disk is divided perpendicularly into two equal parts, one of which contains the convex, the other the concave. In each half the weaker and more com-

monly occurring glasses are set in the outer semicircle, while the stronger ones are put in the inner one.

The outer or inner circle can be rapidly brought into position by simply sliding the disk upwards or downwards on the handle by means of the thumb of the hand which holds the instrument, and this can be done if desirable without removing it from the eye. By this simple contrivance all the necessary glasses are contained in a single stationary but revolving disk, and they can be brought into position with the least possible delay or inconvenience. In order to clean the glasses, which need only be done very occasionally, it is only necessary to unscrew the handle near the mirror, and the disk can then be readily slipped off the handle and both surfaces of the glasses thus exposed.

One hole (O) is left vacant to represent emmetropia, and for the examination of the inverted image without an eye-piece. Should, however, the latter be desired, the observer has a large collection at his disposal. The strong numbers of each set are designed for the determination of the highest degrees of the errors of refraction, and for the measurement of the inequalities of the fundus, such as elevations and excavations of the optic nerve, projections of tumours, retinal detachments, membranes in the vitreous, etc.; with the stronger convex glasses, such as $\frac{1}{2}$, opacities of the cornea and lens can be viewed under considerable enlargement.

Great care was taken to have the mirror, which is concave, 7″ focal distance, ground exceedingly thin, thus rendering the image perfectly distinct, and, I think, unusually brilliant. The mirror, being contained in a separate cell, is made detachable, so that a weak light mirror can be substituted, or the instrument be used, when the mirror is removed, as an optometer, the patient himself revolving the disk till a suitable glass is obtained.

While every effort has been made to make the parts necessary for optical purposes as delicate as possible, the instrument itself has been purposely made sufficiently strong to withstand even more than ordinary wear and tear. I would take this opportunity of informing those who are desirous of obtaining the instrument, that it can be had of the maker, H. W. Hunter, 1132 Broadway, New York. The price of the instrument is $30.

Art. XII.—*Poisoning by Rhus Toxicodendron.* By Wm. H. De Witt, M.D., Assistant Physician to the Longview Asylum for Insane, Cincinnati, Ohio.

I have recently had under observation two cases presenting many of the symptoms of poisoning by the Rhus Toxicodendron. They occurred

prior to the publication of Dr. Busey's article in the preceding No. of this Journal, and hence, I must confess that I was a little puzzled in making a diagnosis. The local manifestations led me to suspect erysipelatous trouble, and yet, in the absence of constitutional symptoms, I was slow in diagnosticating it as such; my mind was not well made up until I read the article referred to above.

In the first case that came under my notice, the eruption made its appearance in the form of vesicles over the right mastoid process and from thence it slowly extended to the ear. For three or four days the disease seemed to remain stationary, spreading little if any. There was a copious exudation of turbid serum poured out from the vesicles; this soon formed into semitransparent incrustations.

On the morning of the fifth day I noticed considerable puffiness of the left upper eyelid. The disease from this time forward rapidly extended over the entire face, neck, and upper aspect of chest. The tumefaction and inflammation were well marked, disfiguring the patient to such an extent that she was *scarcely* recognizable. There was no pitting upon pressure. There was a copious exudation over right side of neck and left side of chest; face almost free from exudation. On the sixth day the eruption made its appearance on the hands; the vesicles were small and aggregated in patches varying in size from that of a three-cent piece to that of a silver half dollar. The fingers on their proximal surfaces were thickly studded with vesicles. The tumefaction and redness of the parts were but slight. Patient complained of intense burning and itching, and unless closely watched, would frequently indulge in the luxury of scratching, which for the time being seemed to afford relief, but in the end only aggravated the trouble.

There was not the slightest constitutional disturbance during the entire course of the disease. Temperature and pulse remained normal; appetite good. The patient took liberally of quinia and iron, and the parts were bathed freely with a solution of acetate of lead. Not being satisfied with the results of the latter, I substituted the following, to be painted over the face, neck, and chest, three times a day: glycerine ℥ij, tinc. iodine ℥ss, carbolic acid ʒss, morph. sulph. gr. x. This seemed to afford almost instant relief from the burning and itching. On the eighth day the tumefaction and redness had subsided in a very great degree. The improvement was rapid from this time forward; the patient being considered well on the eleventh day from time of invasion.

The second case that came under my observation developed soon after the first recovered. It was not, however, nearly so well marked. The inflammation and tumefaction were confined to the right side of the face, never extending beyond. There was no fever, or acceleration of pulse. Patient complained of nothing but the burning and itching. I applied in this case, as in the first, the glycerine, iodine, carbolic acid, and morphia, and with very happy results. The case made a speedy recovery.

There is one thing in the history of these cases that I confessedly do not understand, viz., how it is possible to have such *extensive local manifestations without any constitutional symptoms.* In the first case, of which I have given a brief history, there was extensive cutaneous inflammation, and I am not certain but that the inflammation extended even

beneath the skin, involving the subcutaneous structures. I can account for the tumefaction upon no other hypothesis, and yet, with all this local manifestation, there was not the *slightest* constitutional trouble.

ART. XIII.—*Treatment of Poisoning by Rhus Toxicodendron with Linseed Oil and Lime-water.* By A. C. MATHESON, M.D., of Camden, Wilcox County, Alabama.

DURING the past summer I treated several cases of poisoning of the skin from contact with Rhus Toxicondendron; and was much interested by the communication of Dr. Busey in the October No. of this Journal.

The last case was that of a young man aged 15. He had twice before been poisoned while living in Kentucky; the last time in the spring of 1872. The eruption was confined to the hands and face, and he was represented as having suffered severely for several weeks, during which time he had been treated by two or three physicians. All of the usual prescriptions were tried without apparent benefit..

I was called to see him in the afternoon of 6th September. Having the above previous history, special inquiry was made as to recent exposure, and it was clear that he had come in contact with the Rhus about the 1st of September. On the 3d the eruption began to appear. Sugar of lead lotions and some other applications had been tried, but the symptoms increased in severity, with some fever. When seen he was sitting up with both hands lying on a pillow, fingers extended, countenance expressive of great suffering; said he had not slept for the two past nights. There was a slight eruption on the face, which gave him no trouble, and which was subsiding under the sugar of lead lotion. The hands were very much swollen, the eruption extending over the backs of both hands and to the ends of the fingers. In the language of Griffith, there were "violent itching, redness, and tumefaction of the parts, succeeded by heat, pain, vesication, and fever." The vesicles on the inside of the fingers were large and adding to the pain by pressing against each other; they were punctured with a fine needle to let off the serum. I gave him sulphate of morphia gr. $\frac{1}{6}$, and ordered a dose of Seltzer aperient the next morning. As a local application I prepared the Carron oil (linseed oil and lime-water, equal parts). With this spread upon old linen the affected parts were completely covered, and it was directed that frequent brushings over the cloth, from the outside, without exposing the inflamed surface, should be kept up.

September 7. He passed a better night and was relieved of the fever. The inflammation was still severe, but the pain was less. The treatment was continued without any change in the local application, and on the third day he was very much better, and was entirely relieved on the fifth day of treatment. His parents, remembering his other attacks, were much gratified with the result, and expressed their surprise at the quickness of the cure.

At the time of making this application, I had not met with the researches of Prof. Maisch, and was led from the resemblance between the

eruption and that of a scald from steam, to prescribe the Carron oil, which I had used in scalds and burns with success. I am indebted to Dr. Busey for a rational and scientific solution of the action of the remedy, which I think will be found more convenient than those employed by him, combining emollient with saponaceous and alkaline properties.

ART. XIV. — *Ovarian Tumour Removed by Enucleation; Drainage through the Douglas cul de sac, etc.; Recovery.* By GEO. A. MURSICK, M.D., of Nyack, N. Y.

As the following case presents some points of practical interest, I have thought it best to place it upon record.

Mrs. G., aged about forty years, married, but never pregnant, presented herself to me about two and a half years ago for advice concerning a small tumour which she had discovered in her left iliac region. Upon examination by palpation and per vaginam, I found a tumour of the left ovary about the size of a large orange, which I advised her to let alone and await events.

The tumour slowly increased in size, so by the summer of 1872 she appeared like a woman six months pregnant; and was thought by her friends to be so. As her general health at that time was beginning to fail, I advised its removal; but she declined any operation. I did not see her again until April last, when she presented the following appearance: The tumour had largely increased in size, the abdominal walls were thin and tense, through which the outlines of several cysts could not only be felt, but could be seen. She was much emaciated, her respiration was embarrassed, and her strength was failing her. She then wanted it removed. The dangers she had to face were frankly stated to her, when she remarked that "she could die but once."

May 29. With the assistance of Dr. John Shrady I proceeded to remove the tumour. Anæsthetic, sulphuric ether. The usual incision was made through the abdominal walls below the umbilicus, and about four inches in length. Upon division of the peritoneum a large quantity of reddish-coloured serum gushed out. The largest of the cysts which presented at the opening was tapped with a large-sized trocar, and about a quart of clear amber-coloured fluid drawn off. This enabled me to introduce my hand into the abdomen, when I found the tumour largely adherent posteriorly and in the region of the pelvis. The peritoneum and the peritoneal surface of the intestines were stained a reddish-brown colour, and studded with numerous flocculi of lymph, evidence of a past peritonitis of mild character. Seven cysts were tapped successively, and their contents, a clear amber-coloured fluid, drawn off. They varied in size from an egg to a cocoanut. This reduced the size of the tumour about two-thirds. The abdominal incision was now extended upwards to two inches above the umbilicus. As an attempt to elevate the tumour from the abdominal cavity proved fruitless, I proceeded to detach it, with my fingers and the handle of a scalpel, from its adhesions and *vascular investment.* This

was done without serious difficulty, and the tumour removed. *No hemorrhage occurred, and no ligatures were required.* Apprehensive lest fluid should accumulate in the abdominal cavity, after the closure of the incision, I deemed it expedient to make an opening for free drainage through the vagina. I therefore punctured the Douglas cul de sac with a large trocar, and passed one end of several strands of stout ligature silk out through the vagina, the other end out at the lower end of the abdominal incision. The two ends were knotted together externally, thus establishing a regular *seton* for drainage purposes. The abdomen was now carefully cleansed, and the incision closed with six silver sutures passed through the peritoneum, and over which was laid a cloth wet with warm water, and a binder was applied. The patient was now placed in bed; bottles of hot water were applied to her feet, and a third of a grain of morphia was given by subcutaneous injection.

The tumour, upon further examination, proved to be not only multilocular, but proliferous—that is to say, it was made up of nine primary cysts, from the interior walls of three of which numerous smaller cysts had developed, which by proliferation had nearly filled up the parent cyst, giving it the external appearance of a cystic sarcoma. The sacs and their contents weighed about thirty pounds.

29*th*, 10 P.M. Pulse 120; respirations 18; skin moist; mind confused from the effects of the ether; has some spasmodic twitchings of the muscles of the lower extremities. Ordered ℞. Tr. opii gtt. xx; spts. frumenti ℥ij, every three hours.

30*th*, 7 A.M. Pulse 104; skin moist; temperature normal. Drew off six ounces of urine with catheter. Says she has occasional cramps in her legs. Ordered ℞. quiniæ sulph. gr. ij; morph. sulph. gr. ⅛, in solution, every three hours; also a tablespoonful of milk-punch every two hours—with cracked ice *pro re nata*. 8 P.M. Pulse 110; some fever and gastric irritability; vomited the last dose of quinia, but retained the milk-punch; has urinated twice during the day; moved the seton drainage threads backwards and forwards, to keep the opening free.

31*st*, 7 A.M. Pulse 110 and intermittent; has fever, and complains of excessive thirst; the gastric irritability has increased; some tympanites; expression anxious; skin sallow, in fact she presents the general appearance of the initial stage of septic poisoning. Ordered ℞. Quiniæ sulph. gr. x; morphiæ sulph. gr. ¼, at once; milk-punch and ice to be continued. 12 A.M. She vomited the quinia powder; tympanites increased; complains of pain in the abdomen, and is very restless; *slight discharge from the vagina.* Introduced a Nott's double uterine catheter through the lower end of the abdominal incision, and washed out the abdomen with the following solution: ℞. Sodæ chlorid. gr. xx; acid. carbolic. gr. v; aquæ bul. Oj. The return discharge was of a dirty red colour. 7 P.M. Pulse 110, and feeble; the stomach has rejected everything swallowed, and she is much prostrated; the tongue is becoming red and dry. Ordered ℞. *Quiniæ sulph. gr. iv; morphiæ sulph. gr. ⅛, by subcutaneous injection;* and sodæ hyposulphit. gr. xx, every three hours in water; also an enema of beef-tea, containing spts. frumenti ℥j.

June 1, 7 A.M. Pulse 110, and of good volume; expression less anxious. The gastrice irritability is lessened; but she vomits the soda hyposulphite; there is a very free discharge of red serum per vaginam. Syringed out the abdomen as before; also the vagina with a weak and warm solution of acid. carbolic. Ordered ℞. *Quiniæ sulph. gr. iv; morphiæ*

sulph. gr. $\frac{1}{8}$, every six hours, by *subcutaneous injection;* also an anema of beef-tea, containing spts. vini. gal. ℥ss, three times daily, and as much cracked ice, *per orem*, as she chooses to take. 7 P.M. Fever less; some retching, and she spits up a great deal of viscid mucus; tympanites increased. Syringed out the abdomen and vagina as before, and continued the hypodermic injection of quinia and morphia.

2*d*, 3*d*, and 4*th*. The gastric irritability has been excessive, and the constant retching and ejection of viscid mucus tinged with bile have induced great prostration; otherwise she has remained pretty much in the same condition, and the same treatment has been continued. The discharge per vaginam has been quite free, and the seton threads have been drawn backwards and forwards twice daily to keep the opening free.

5*th*. 8 A. M. Her general condition has much improved; pulse 98; no fever; tongue red, but more moist; the gastric irritability has nearly ceased, and she expresses a desire for food; the discharge per vaginam is much less, and the tympanites is slight; syringed out the vagina, etc., ℞. Tinct. ferri chlor. gtt. xx.; potass. chlorat. gr. x, every six hours. To have chicken-broth and milk-punch. The abdominal incision has entirely healed except at its lower end; removed all the sutures. 7 P.M. Some fever; pulse 104; discharge per vaginam free; there is a small bed-sore forming over the sacrum.

6*th*. 8 A.M. Pulse 86; she is steadily improving and is able to take a moderate quantity of fluid food and milk-punch, which the stomach retains together with the medicine. ℞. Quiniæ sulph. gr. v, in one dose daily in addition to the iron, etc. 7 P. M. The discharge from the vagina is slight, and the abdomen is quite flaccid; is doing well.

7*th*. 8 A. M. Pulse 94; complains of a great deal of flatus; her bowels have not been moved since the operation; *removed the seton threads.* ℞. Ol. ricini ℥j; other treatment continued. 7 P. M. Bowels have moved three times; pulse 90; is sweating profusely.

8*th*. Pulse 86; is doing well, but is excessively weak; the discharge per vaginam is very slight. ℞. Acid. phosphoric. dilut. gtt. xx; strychniæ gr. $\frac{1}{20}$, every six hours, and brandy four ounces daily made into milk-punch, and as much beef-tea as she will take.

11*th*. She has steadily continued to improve, though her bowels have been rather free for the past twenty-four hours; the stools are black and tarry; the acid. phosphor. and strychnia were suspended, and ferri et potass. tart. gr. v, and quiniæ sulph. gr. ij, three times daily, substituted; the diarrhœa is controlled by tinct. opii deodorat. gtt. xx *pro re nata.*

28*th*. She continues to improve, but regains her strength and appetite slowly; some slight discharges have occurred per vaginam, but they have now ceased; she sits up part of the time, and occasionally walks across the room. ℞. Quiniæ sulph. gr. ij; strychniæ gr. $\frac{1}{20}$; three times daily in solution.

July 14. Has continued to do well, and is now up and about the house attending to her household duties; her general health is steadily improving, and she states that she feels much better than she has done for the past three years.

Aug. 1. Health perfect; is growing quite fleshy; menstruates regularly, and has hopes of future offspring.

I have reported this case in detail because of its points of practical interest, viz. :—

1. The removal of the tumour by enucleation.
2. The establishment of free drainage per vaginam by the seton.
3. The administration of medicine by subcutaneous injection, in consequence of the excessive gastric irritability.
4. The support of the patient by nutritive enemata.
5. The value of quinia in the prevention and cure of septicemia.

Since Dr. Minor reported his case a number of ovarian tumours have been removed by enucleation, and I have no doubt but that further experience will prove this method of procedure to be one of great value, especially in cases where the peduncle is short, or, as in the above case, where there was practically no peduncle. It dispenses with the use of clamps, ligatures, *et id omne genus*. The ruptured vessels of the investment of the tumour bleed but little, if any, and a slight oozing of blood is of much less consequence, where free drainage is established, than the application of ligatures of any kind, which *are not always* sacculated, and which often induce the formation of abscesses and other obnoxious sequelæ.

Dr. Sims has recently called attention to the value of free drainage *per vaginam* as a preventive of septicemia after ovarian operations, and with his usual ingenuity has devised several instruments to facilitate it, as he was not satisfied with Chassaignac's drainage tubes. The procedure adopted by myself was a very simple one, and in this case proved effective, not only in affording free drainage *per vaginam*, but in keeping open the lower end of the abdominal incision, and thus avoiding the use of tents, which are occasionally required for that purpose. By the aid of Nott's double uterine catheter introduced through the opening, the abdomen can at any time be thoroughly syringed out with an antiseptic or other wash, as has been often done by Dr. Peaslee, to whom we are indebted for this procedure.

The value of quinia as a preventive and in the treatment of septicemia has been fully established, and I need not dwell upon that point, but I would especially call attention to its administration by subcutaneous injection, in cases accompanied by excessive gastric irritability. For several days my patient's life "hung by a thread," the stomach rejecting everything; but by this method it was administered with facility and its action was prompt *To it* and the administration of sufficient nutriment by the rectum during the days of excessive gastric irritability, I believe my patient owes her life more than to anything else.

I have given quinia by the rectum both in septicemia and in pyæmia during my military service, but its absorption into the system was so slow that but little if any good was accomplished by it. Had I given it at those times by subcutaneous injection, I have no doubt that my success would have been greater.

ART. XV.—*Case of Primary Excision of the Ankle-joint.* Reported by H. G. LANDIS, A.M., M.D., of Niles, Ohio.

G. H., æt. 15, on the 28th of July, 1873, fell off a mowing-machine while in motion. The knives struck the left ankle from without, cutting off the external malleolus, shaving a thin segment from the top of the astragalus and completely exposing the joint, leaving the foot attached to the leg by a thin flap over the internal malleolus, three inches in breadth, but in which the posterior tibial vessels and nerves lay uninjured. The foot could be doubled over on the leg, and when the boy was first seen in the harvest field, he was standing on the head of the tibia with the foot to one side. I saw him in consultation with his family physician, Dr. A. G. Miner, two hours after the injury, when he was in the following condition: There was no perceptible shock; pulse full and regular; very little pain, and the hemorrhage had ceased, having been very slight throughout. The foot was warm and the recurrent circulation completely re-established, even in the central portion of the detached member. It seemed, therefore, entirely practicable to save the foot. After the patient had been anæsthetized, Dr. Miner sawed off the articulating surface of the tibia and the projecting portion of the internal malleolus; enough of the astragalus was also removed to insure neat apposition. The foot was then replaced and the skin brought together by silk sutures. Both ends of the anterior tibial were tied (the distal end giving as large a jet as the proximal), and also the peroneal artery. The wound was then completely covered with freshly-scraped lint, a straight splint applied as a temporary expedient, and a roller bandage. He was then placed on his back in bed, with the foot, fully everted, on a small pillow. Anodynes to be given if required, and cold water to be applied if the foot became hot. At the risk of becoming tedious, I desire to give the after-history, in detail in the hope that the elements of success may be apparent.

July 29. Condition good; pulse 96; slept well after 2 A.M.; no hemorrhage, and the lint has become an hermetical seal. A fever mixture of spirits nitre and aconite was prescribed, and small doses of morphia every three hours, to which was added quinia. The latter was given more for local reasons, the neighbourhood being malarious, than for any therapeutic indication. A one per cent. solution of carbolic acid was directed to be constantly applied.

30*th*. Comfortable; pulse 100; temperature 100°; temperature of external side of foot, as nearly as could be ascertained, 98½°. He has complete sensation throughout the whole foot. As his position was uncomfortable we had provided a light box made of tin, with a high footpiece, and a portion of the outside strip removed to allow of dressing the wound. The limb was carefully placed in this, supported by cotton batting and steadied by small bran bags, and the box swung to a staple in the ceiling. The lint on the cut was not disturbed, and the carbol dressing continued, as also the quinia and morphia. The tongue was heavily coated, there having been no movement of the bowels since the 27th, for which blue mass was given, to be followed by oleum ricini.

31*st*. Bowels moved once; much pain in foot during night; pulse 90; temperature 99°; foot of natural warmth; removed lint from lower part of wound; found about an inch apparently healing by first intention;

added to treatment quinia and tinct. ferri chlorid.; morphiæ sulphas and bromide of potassium to be given *pro re nata*.

Aug. 1. Pulse 90; temperature 99½°; removed lint and dressed with adhesive strips; some swelling which increased through the day, and by 6 P.M. he was suffering considerable pain, the temperature had risen to 100¾° and pulse to 100; bowels still sluggish; repeated laxative and gave spts. ætheris nitros. through the night.

2*d*. Seen with Dr. A. J. Leitch; feels somewhat better; swelling not increased; pulse 100; temperature 100¾°.

3*d*. Had a good night; pulse 94; temperature 99½°; foot looks well; took it out of box to dress it and replaced it; removed two stitches, which liberated a little bloody pus; we suspect him of masturbation, even in our presence; the pulse was only 90 after the dressing, and the tongue clearing off; sent for again in the evening at 8 o'clock; is reported to have had several slight spasms; pulse 120, but temperature 100¾°; gave potass. bromidi gr. x, camphoræ et opii, āā gr. ss.

4*th*. Called in the advice of Dr. D. B. Woods, of Warren, who considered his condition favourable; pulse 88; temperature 99°; slight discharge of healthy pus from the wound; swelling diminished. From this time Dr. Miner took exclusive charge of the case, and to his kindness I am indebted for the remaining notes.

6*th*. Pulse 90; temperature 99½°; feels well; very little swelling or suppuration.

8*th*. After a Seidlitz powder he passed a number of large lumbricoid worms.

9*th*. Temperature 99°; administered santonin, which caused a further exodus of lumbricoids; from this date he improved steadily; the foot was disturbed as little as possible, and the carbol dressing steadily applied.

27*th*. Thirty-first day after injury; the cut is entirely healed except the points of exit of the ligature; that of the peroneal artery was removed to-day; the others are firm.

28*th*. The ligature on the distal end of the anterior tibial came away after slight traction; that on the proximal end was not detached until Sept. 8th, the forty-third day; it had not been deemed advisable to change the position of the leg until the ligatures had become detached, and for a short time a small slough on the heel had existed, which was relieved by first removing pressure by cutting a trap in the box, and afterwards dressing with carbolated oxide of zinc ointment; on Sept. 10th an albumen bandage was applied; on the next day this was opened by a longitudinal incision in front, padded with cotton, and the patient allowed to move about; by Sept. 30 he could bear some weight on it, with every prospect of a serviceable foot. Although the ankle-joint is obliterated by anchylosis, the removal of part of the astragalus so changes the relative position of the astragalo-cuboid articulation as to lead to the hope that it may serve as a partial substitute. The cartilage of the epiphysis was not interfered with, so that the growth in length of the leg will not be materially disturbed.

I am inclined to think that one very important element of the treatment was the unremitting use of a solution of carbolic acid. During the whole time the foot looked well. The swelling was slight at any time. There was no violent inflammation. Except from the habits of the patient and incidental circumstances, there was no cause for alarm at any time. Con-

trasting this with the fact that excision of the ankle-joint is by no means regarded with universal favour, it may prove instructive to study carefully an eminently successful case, and endeavour to learn why it is not applicable to all injuries of a like character.

ART. XVI.—*Exophthalmic Goitre successfully treated by the Iodo-bromide of Calcium.* By C. H. GUPTILL, M.D., of Eliot, Maine.

SEPT. 22, 1872, was called to visit Mary G., unmarried, æt. 45, who had been under the care of a respectable physician for one year, and had been treated for anæmia and nervous troubles regarded as the result of long confinement as a seamstress. She received no benefit from the treatment, chiefly tonic. I found her much emaciated; very excitable; bowels constipated; appetite poor; urine scanty and high coloured; pulse very rapid and small, often could not be counted; heart's action felt over a large area; breathing laboured, and muscles of neck enlarged, tending to rigidity; veins of face and neck congested; the thyroid gland was much enlarged, and this first alarmed the family. She had intolerable headaches; the expression of the face was that peculiar to exophthalmic goitre; the eyeballs very prominent, giving a wild stare and a larger look to the eye than natural. I had seen in thirty years of practice only one similar case. I prescribed Trousseau's treatment, viz., digitalis, which after a fair trial proved ineffectual; gelseminum and Fowler's solution were then successively used, but without benefit; anodynes for the headaches only aggravated the conditions present; nervines were useless in their turn; stimulants made matters worse. About three months and a half after taking charge of this case, new features appeared. Induration presented itself of the abdominal muscles, also of the thighs and legs. At this time I was led to prescribe the iodo-bromide of calcium in the form of solution—one half a teaspoonful in water morn, noon, and eve. The indurated portions were also bathed with the same. Under this treatment my patient at once improved. The heart's action became more quiet. The nervous excitement calmed, the appetite returned, the patient gained strength. Soon she was able to leave her bed. The thyroid gland lessened in size, and in six months became natural. Soon my constant services were not required, and my visits became occasional only. Miss G. is now in very good health. I have, however, to say that she is not able to do without this medicine. If she omits its use for some weeks her symptoms return. She becomes excitable, and resorts to the remedy, always with success.

I regard the iodo-bromide of calcium as a very valuable addition to our therapeutical list. It is a decided sedative, as I have seen in other nervous cases. It is an efficient alterative, and is well calculated to meet many conditions where a sedative, alterative, and tonic treatment is required. The effect is very satisfactory where nervous irritability and debility are conjoined with a peculiar cachexia, as seen, for instance, in exophthalmic goitre.

ART. XVII.—*Embolism of the Central Artery of the Retina in both Eyes; Death.* By OLAF PAGE, M.D., of Valparaiso, Chili.

ON the 4th of April, 1873, I was consulted by a German, twenty years of age, on account of blindness of the left eye, which he had first become aware of the morning of the same day, on waking up. On examination there was not the slightest perception of light, either natural or artificial. I found with the ophthalmoscope that the optic nerve appeared very white, not however like that whiteness due to atrophy. The arteries were reduced to mere threads. The veins within the circumference of the optic nerve appeared somewhat smaller than those in the sound eye, whereas, beyond that limit, they seemed in parts very much gorged. The macula was occupied by a red stain. The whole retina appeared a little paler than in the sound eye. The state of the parts as revealed by the ophthalmoscope, and the history of the case, in regard to the suddenness of the attack, led me to the conclusion that the loss of sight was due to embolism of the central artery of the retina. I examined the heart, and found the diagnosis in a great measure confirmed. At the base was to be heard a loud, harsh, grating sound, due, no doubt, to extensive disease in the aortic valves. When the patient was informed that there was in all probability no remedy for the loss of sight, and that it was due to disease of the heart, he expressed much surprise, as he had never felt the slightest inconvenience, having always walked and danced and ridden as much as any of his friends. He had, in fact, two days before he discovered his condition, been violently thrown from his horse, falling on his back and side. It is not improbable that the shock thus produced may have been the immediate cause in this process. He was most strictly enjoined to lead a quiet, sober life, which advice he as carelessly obeyed. Two months after this date, I begged him to let me examine the eye, and found complete atrophy of the optic nerve. I saw no more of my patient until the evening of the 13th of September, when he was led into my house completely blind. He had been found by one of his friends groping about on the sidewalk. He had a dim perception of a strong gas light, and under the ophthalmoscope there was a slight degree of sensitiveness. The retinal vessels appeared very much reduced in size, the arteries indeed perfectly filiform. Towards the periphery the veins seemed here and there somewhat enlarged. As the poor fellow appeared very ill indeed, his tongue very foul, breath offensive, pulse 120, and pain about the region of the heart, and some cough, I advised him to go back immediately to his quarters. He had evidently been drinking heavily for some days previous to this. The following day I saw him at his lodgings, and finding him in a most deplorable condition, without attendance of any kind, I advised him to go to the British Naval Hospital, under the care of Dr. Geo. F. Cooper. On the 15th he was taken there, and put into one of the private rooms. On the 18th Dr. Cannon, House Surgeon, reported as follows: "The German died yesterday evening. He was suddenly seized with intense dyspnœa at 5 P.M., and at 6 I saw him moribund; pulse beyond counting, extremities cold, great restlessness and distress, etc." The post-mortem was made 16 hours after death, by Dr. Cooper and myself, with the following results:—

The pericardium contained about 1½ oz. of a straw-coloured fluid. Both

lungs very much congested. In the left at the lower and back part several slight adhesions. The heart very large, weighing 1 lb. 11 oz.; the walls of the left ventricle enormously hypertrophied; ventricle itself full of dark blood. The aortic valves thickly covered with large vegetations, in many points perfectly calcified. On their ventricular surface, a condition of softening was noted. A probe could be passed through one of the valves. The right auricle and ventricle healthy; gorged with dark blood. Pulmonary artery full of coagulated blood; valves perfectly sound; tricuspid likewise. Kidneys slighted congested, otherwise normal. On examining the brain, its substance was found quite healthy. The left middle cerebral artery contained a large firm clot; ophthalmic arteries perfectly healthy; no clot.

Owing to a want of proper instruments, I regret very much to say that a microscopical examination was not made. Nevertheless, from the history of the case, from the sudden way in which vision was abolished, from the ophthalmoscopic appearances, and from the condition of the heart after death, there can be no hesitation or doubt in ascribing the loss of sight in both eyes to embolism of the central artery of the retina.

VALPARAISO, No. 8 Calle Planchada.

ART. XVIII.—*On the Guaiacum Process for the Detection of Blood as a Valuable Aid in distinguishing Nucleated from Non-nucleated Red Blood Disks.* By R. M. BERTOLET, M.D., Microscopist to the Philadelphia Hospital.

THE large size, elliptical shape, and the central oval nucleus, characterizing the red blood disks of birds, fishes, and reptiles, are generally considered as ample land-marks to enable even the merest novice in microscopy to distinguish the blood of any animal belonging to any one of these three great classes from the flat, biconcave, non-nucleated disks characterizing human and mammalian blood. Such is the case, at least, as far as fresh specimens are concerned, but it is far from an easy matter to discriminate between these two kinds of blood when they have once become clotted and thoroughly dried. What great changes this process of drying implies! The corpuscles are no longer flat and smooth, but shrunken and crenated; their outlines are no longer regular and sharply defined, but irregular, jagged, or stellate; they are so intimately agglutinated with one another, and hidden in the meshes of the coagulated fibrin, that it becomes difficult, even in thin fragments, to recognize them.

When blood is very thinly spread out and rapidly dried upon a glass slide, then the disks remain firmly stretched and the diameters are not materially altered;[1] but when left to dry in any other manner, the great shrinkage and other alterations in the corpuscles just enumerated take place. Under these circumstances it becomes an extremely difficult task

[1] Vide Stricker, Gewebe Lehre, Leipsig, 1871, p. 280.

to decide which of the two kinds of blood we have to deal with. The size and shape of the dried corpuscles are not to be depended upon; to resuscitate them exactly to their original condition by the imbibition of fluids is an impossibility, especially so when irrigation with pure water is resorted to, as recommended in *Wharton and Stillé's Medical Jurisprudence*, § 758, 3d ed., 1873. Distilled water not only completely abstracts the colouring matter from the red corpuscles, so that the author of the article on "Microscopic Evidence" found it necessary to render them "more obvious" by adding iodine or red aniline solutions, but it also finally causes both the colourless and coloured disks to disintegrate and eventually to disappear.[1] These are sufficient reasons to condemn the use of water in the examination of dried blood. There are other less objectionable fluids that may be employed—the sulphate of soda in solution is excellent; I have found none, however, so admirably adapted as slightly acidulated pure glycerine. It does not evaporate, so that specimens mounted in it can be kept an indefinite time for study. Its slight acidity will render the nuclei more distinctly visible when present.

How rarely, though it must occur in medico-legal cases, that the microscopic expert has given to him blood that has not already been more or less completely dried. In very many of these cases it is of the utmost importance to determine which of the two kinds of blood it is, and the determination of the presence or absence of the nuclei in the red corpuscles is of more importance than all the other features possessed by the different bloods, frequently virtually deciding the guilt or innocence of the accused.

The addition of serum-like and other liquids to small fragments of the questionable blood, mounted beneath the microscope, is not to be neglected, yet very unsatisfactory, for as yet there is no liquid known which will precisely restore the size and shape of the once dried corpuscles. Those from the mammalian animals can be made to swell out, but become circular in outline instead of biconcave as seen in the fresh state; while the elliptical disks become more nearly round and their outlines pale and indistinct. Hence the great importance attached to the nucleus, for it frequently is the only distinctive mark between the two kinds of blood. In cases where the blood stains are alleged to be those of some animal having the nucleated disks, it behooves the examiner to use every exertion to develop, if possible, the nucleus.

Although few experienced microscopists would hesitate in pronouncing upon the existence or non-existence of a nucleus in any given corpuscle, it is an extremely difficult matter to establish the fact in the minds of the jury, and still more difficult to demonstrate it clearly to those who are unaccustomed to making microscopic observations.

[1] Dr. Kline, in Burdon-Sanderson's Handbook for the Physiological Laboratory, 1873, p. 29.

Any method, therefore, which will enable the examiner to demonstrate, without the shadow of a doubt, not only in his own mind but also to a jury, the presence or absence of the nucleus cannot fail to be accepted as a most valuable corroborative proof. Such a method for differentiating between the two kinds of blood, I believe is to be found in the well-known guaiacum test for detecting blood stains.

If a microscopic preparation, mounted in feebly acidulated glycerine or other suitable fluid, is carefully irrigated with a properly prepared alcoholic solution of guaiacum resin; then when a very small quantity of the ethereal solution of the peroxide of hydrogen (ozonic ether) is introduced beneath the glass cover, a bluing, varying from a light sapphire to a deep indigo shade, will be observed in the several corpuscles of mammalian blood. Though the degree of coloration of the different corpuscles presents considerable variety, yet all parts of the individual corpuscle itself are coloured uniformly. If the blood has been derived from an animal having *nucleated corpuscles*, an *entirely different* picture is presented; when treated by these same reagents, *the nucleus is seen as a sharply defined, dark blue body, while the protoplasm surrounding it assumes a more delicate violet hue.* Sometimes the other parts of the blood-globules are not the least coloured; in all instances, however, the nucleus is deeply stained and easily recognizable when present, even by the uneducated eye.

The charming picture, that can thus be produced by differentiating the nucleus from the other parts of the corpuscles, may be of invaluable service where it is desirable to *convince* the jury by optical proof of the existence of the nucleated blood-globules. Furthermore, in those cases where the blood is alleged to pertain to an animal having the nucleated disks and found not to be such by the ordinary methods of investigation, I believe it to be the duty of the expert to employ this method of *searching* for the nucleus, as stated in my testimony at the trial of Talifero, at Martinsburg.[1]

The attention of the profession has not yet, as far as I can ascertain, been called to this, the ultimate application of the guaiacum process for the detection of blood. The original papers of Dr. Day, of Geelong, Australia, who first established the reliability of the guaiacum process as a blood test, have been inaccessible to me, yet Dr. Alfred S. Taylor, to whom they were referred, and who has himself investigated with this process, states:—

"It simply enables the operator to say whether that which he is examining is the colouring matter of a red-blooded animal. It throws no light on the class of animal to which the blood belongs; it may be hot-blooded or cold-blooded, a mammal or a reptile."[2] . . . . . "So again the process does not enable the examiner to detect the blood-globules, or cells, or even to speak of their presence."

This is certainly an underestimation of its value, for with proper pre-

[1] Vide Martinsburg "Independent," Nov. 22, 1873.

[2] Guy's Hosp. Reports, vol. xiii. p. 440, 3d series, 1867.

cautions the blue-coloured disks or blood-globules can be obtained with this process; the examiner is thereby enabled to solve the question whether the blood is human or from a bird, fish, or reptile; but it affords him no light upon the question which so frequently arises, namely, whether the blood is human or from a mammalian animal.

In the fresh condition it is a comparatively easy matter to see and manipulate, so to speak, the nucleus. By the addition of a two per cent. solution of boracic acid, the elliptical blood disk swells and acquires a circular contour;[1] the oval nucleus becomes more and more spheroidal and yellow, while, at the same time, it increases in size. Here and there corpuscles are met with in which the yellow central body is not round, but beset with processes which stretch like rays towards the periphery; this is especially the case when a tannic acid solution of the same strength is employed;[2] the nuclei are apt to assume, also, a more eccentric position and after a sufficient length of time, the observer is sure to see many corpuscles in which they lie, some partly, some entirely outside of the outline of the pale disk. None of these phenomena are observed when dried blood is acted upon by these agents. Acetic acid[3] gives a beautiful red (hæmatine) tint to the fresh nucleus. A neutral solution of carmine,[4] as well as aniline colours and other substances stain, more or less intensely, the disks and their nuclei, but none of them are quite as satisfactory as that produced by the guaiacum process. It may here be observed that ether, since it is employed in obtaining this blue colouration, has the effect upon amphibian[5] and like blood of somewhat diminishing the size of the corpuscle, but, on the other hand, the *thickness of the margins has increased* and the *nuclei* are very clearly and *sharply defined.*

Another reason, besides its superiority, for employing the guaiacum resin and the ozonic ether in order to colour the nucleus, lies in the fact that the examiner is not dealing with substances involving the use of additional strange technical terms, but with such that he has already thoroughly familiarized his audience with. For it is not only necessary in medico-legal cases that he *himself* be satisfied that he is dealing with blood, but he ought to be able to convince all that the matter under consideration is nothing else than blood. This can readily be accomplished, even with a very small quantity of blood, by the exhibition of the oxidation of the guaiacum upon a white porcelain surface, or paper; by the production of hæmatin crystals, which also can again most readily be proved to be such by the same bluing process; finally, it should be employed under the microscope to show the presence or absence of the nucleus.

[1] Dr. Kline, l. c. p. 30.
[2] Boettcher, Virchow's Archiv, Bd. 36, p. 342.
[3] Henle, Allgemeine Anatomie, p. 431.
[4] A. Rollett, Stricker's Gewebe Lehre, p. 293.
[5] A. Rollett, Stricker's Gewebe Lehre, p. 291.

ART. XIX.—*Immediate Compression of the Common Iliac Artery for the Prevention of Hemorrhage during Operations upon the Lower Extremity, particularly in Reference to its Usefulness in Hip-joint Amputations.* By FRANK WOODBURY, M.D., Resident Physician at the Pennsylvania Hospital.

IN the performance of an operation involving section of the femoral artery in its upper portion, the absolute control of the circulation through the vessel, for a few moments, is of inexpressible importance, and may decide the success or failure of the operation, the life or death of the patient. The difficulty of doing this effectually constitutes the great immediate danger in the operation of amputation at the hip-joint. To meet this requirement surgeons have adopted aortic compression by Dupuytren's or Pancoast's abdominal tourniquet. That these have proved valuable adjuncts, and that their use has been attended by success, cannot be denied; nor can the fact that they fail to accomplish the result as effectually and with the degree of certainty that are so eminently desirable in such cases; nor are they entirely free from the suspicion that the amount of pressure required may be prejudicial to some of the viscera. When the abdominal tourniquet is applied so as to stop the circulation in the inferior extremities, everything between the pad of the tourniquet and the vertebral bodies must sustain an undeniably abnormal if not pathogenetic degree of pressure. What influence this may exert in the production of the shock after the operation by compression of the solar plexus, or what may be its secondary effects upon the mesentery, intestine, or great vessels themselves (including the vena cava), has not been, until now, taken into consideration as weighed against the great emergency which called the abdominal tourniquet into being; but where the object can be more quickly, certainly, and effectively attained by a simple manual procedure, these accidents command respect, and, where it is possible, should be certainly avoided.

In the examination of a case of nephritic colic, in which a stone was supposed to exist in the renal pelvis, or in the ureter, the writer found that while exploring the abdominal cavity, with the right hand and part of forearm in the rectum, he was able to observe that no stone of size existed in the parts indicated, and was struck by the novel sensation produced by the pulsation of the common iliac arteries and abdominal aorta immediately under the fingers. The idea occurred that the abdominal aorta and iliac vessels might be compressed and controlled with as much certainty and almost as readily as the radial artery. The value of this where the circulation is required to be checked for a brief period, in either or both lower extremities, is sufficiently evident, but is enhanced by the fact that the compression is made by a sensitive fleshy pad directly upon

the vessel, and the venous trunk is avoided. As the patient is always anæsthetized in large operations, compression need not be instituted until the surgeon is ready to commence the external incision; it can be cautiously removed and instantly reapplied if necessary, and is immediately removed when the vessel is secured, thus maintaining the pressure during the *minimum* of time. The bowel should be evacuated by a large warm-water injection previous to the operation. In controlling the right common iliac artery the right hand of the assistant will be the most convenient, and the left vessel will be most easily controlled by the left hand. In either case, the hand being anointed (with lard in preference to oil), and the fingers folded into a cone, it is gradually introduced into the rectum with its dorsum to the sacrum until reaching the sigmoid flexure, when the hand may be pronated, and, as the vessels are right under the fingers, the main supply of blood to the limb may thus, in a few moments, be completely controlled; if, in conjunction with this, the plan recommended by Esmarch, of Heidelburg, be practised, the operation of amputation at the hip-joint may be rendered almost as bloodless as some of the operations of minor surgery. Other applications will suggest themselves as the exigency occurs requiring the checking of the circulation in the limb, such as in the operation for femoral aneurism high up, or in operations lower down, where the size of the thigh makes the application of a tourniquet on the femoral difficult if not impossible.

The value of recto-abominal exploration has been generally acknowledged, and, if in the *éclat* of its first appearance, or the excitement of its reintroduction with new and valuable applications, the operation has been misapplied and even abused by surgeons in their haste to accept such a welcome aid to diagnosis, there also exist cases, as in the diagnosis of the supposed tubal calculus before mentioned, and in the application herein suggested, where it is of undeniable importance. The sphincter muscle of the anus, as in most of the reported cases, regains its tone in a few days, and in tardy cases may be hastened to that result by the daily Faradaic current. Superficial lacerations, fissures of the anus, or hemorrhoids need not occur if a little time be taken in introducing the hand, so that the internal sphincter may have time to yield; when they do occur they rapidly heal under simple treatment.

REVIEWS.

ART. XX.—*A System of Midwifery, including the Diseases of Pregnancy and the Puerperal State.* By WILLIAM LEISHMAN, M.D., Regius Professor of Midwifery in the University of Glasgow, etc. 8vo. pp. xi., 835. Glasgow: James Maclehose; London and New York: Macmillan & Co.. 1873.
The same. 8vo. pp. 715. Philadelphia: Henry C. Lea, 1873.

IT is now eight years since an essay, by Dr. Leishman, on *The Mechanism of Parturition*, was reviewed in the pages of this Journal,[1] in a manner which cannot fail to excite our admiration, both on account of the critical accuracy of its style, and the earnest and uncompromising spirit in which the author sought to estimate the real value of the work as a contribution to a most difficult portion of obstetrics. It was appropriate and fitting that this duty should have been performed by Prof. Hodge, for he was prominent among the few who, relying on their own judgment and clinical observation, had refused to accept, in their totality, the doctrines advanced by the elder Naegele in his celebrated paper, first published in *Meckel's Archives*, in 1813, the appearance of which, and its translation by Dr. Rigby, constituted an era in obstetrics. The description of the mechanism of labour was so lucid, and, as a whole, so satisfactory and easy of verification at the bedside, that it required unusual judgment and talent, not only to recognize the falsity of certain portions of the description, but also to demonstrate the source of error. Cazeaux, Matthews Duncan, and Hodge, in denying the existence of any biparietal obliquity of the head in natural labour, were in direct variance to the teachings of Naegele and his numerous followers. There is no doubt but that, at the present time, the number of those who are unwilling to accept the dictum of Naegele on this point is rapidly increasing, and this result can be traced, in a great measure, to the influence exerted on the minds of the profession by this critical essay, by Dr. Leishman, on *The Mechanism of Parturition*.

The present volume is one which was foreshadowed in the concluding pages of this smaller work, in which the author regrets the restricted nature of his self-imposed task, confined, as it was, to presentations of the head alone, and half hints a promise "of recurring again to the subject," enriched by a more "extended experience and careful study." This promise he has more than kept, for he has produced a "system of midwifery, embracing the diseases of pregnancy and of the puerperal state." It is a splendid contribution to science, a fit companion volume in this age to that of his predecessor, Mr. Burns, whose classic work still charms and delights those whose studies carry them beyond the mere literature of the day. But, valuable as the work is, there are, almost of necessity, portions which do not bear the same evidences of careful study and observation. Instead, therefore, of general expressions of praise or blame, we

[1] No. for April, 1865, p. 143.

have selected such passages in no spirit of verbal criticism or indiscriminate censure, but in order to point out what we consider to be real defects. The researches of the elder Naegele, made in 1825, with regard to the inclination of the pelvis, are accepted without either criticism or comment other than the assertion that he it was who first recognized the fact that the plane of the brim formed with the horizon an angle of 60° or more. As a point of interest to those who love to trace the gradual develpment of anatomy in art, we would call attention to the fact that Leonardo da Vinci,[1] in a drawing of the bony framework of the trunk, has represented the pelvis as inclined to the vertebral column, at an angle which the recent researches of Weber and Meyer have shown to be absolutely correct, while even Vesalius and his followers, until the time of Albinus, taught that the plane of the superior strait was either horizontal or nearly so, so that Hunter's assertion, that "Da Vinci was by far the most skilful anatomist and physiologist of his time," acquires new corroboration. In point of fact a traditional importance has been given to the inclination of the pelvis which it does not in reality deserve, for it is not, as has been supposed, a constant and unchanging relation even in the same individual. Indeed, Naegele had a suspicion of this fact, for after describing his method of measuring this angle, he writes:[2] "One can readily be convinced that this method, simple and easy as it seems, and indeed is, requires nevertheless some practice; for when the measurements, which have been made by any one who has not had some experience in this method, are repeated either by himself or another person, a considerable deviation will usually be found to exist." Weber[3] recognized this fact still more clearly, while Meyer[4] has conclusively shown that this angle of inclination is exceedingly variable even in the same individual, being increased or diminished by the various movements of the lower extremities; thus, for example, it is greatest when the limbs are brought closely together or widely separated, combined with extreme rotation, either inwards or outwards. Hence the source of error in Naegele's method of computation, for, in order to measure the inclination of the outlet of the pelvis on the living woman, from which, by a comparison of the known relation of the inferior to the superior strait, he deduced the inclination of the brim—the patient was obliged to stand, with her legs wide apart and the feet turned somewhat inwards, so that the angle was always *overestimated* by Naegele and others. The actual result reached by Meyer does not differ much from that of his predecessors, as he estimates the angle at 54°.5, while it is usually given at 60°, but the important point reached is this, that being so variable it has but little value in the study of the mechanism of labour, but, inasmuch as it can be materially changed at will by altering the position of the patient, it does acquire a new importance therapeutically considered. There is, however, a point, of far greater importance than the inclination of the pelvis, which finds no mention, viz., the angle which the symphysis pubis forms with the plane of the superior strait; this should normally be about 100°, if, however, it is much greater than this, the entrance of the head into the pelvic cavity

[1] Langer. Sitzb. d. k. Akad. d. Wissensch., 1 Abth., 1867. Leonardo da Vinci, d. erste Darsteller d. richtigen Lage d. Mensch. Beckens.
[2] Das Weibliche Becken Carlsruhe, 1825.
[3] Mechanik d. Mensch. Gehwerkzeuge. Göttingen, 1836.
[4] Meyer die Becken Neigung Arch. f. Anat. and Phys., 1861, p. 178.

must be obstructed, while, by a diminution in this angle, progressive resistance will be offered as the head approaches the pelvic outlet.

Already in the first few pages of his work the author is compelled to deplore the "unfortunate discrepancy" which exists in the whole subject of obstetrical nomenclature; and that this complaint is well founded, can scarcely be questioned when the "*right* oblique diameter of the pelvis" in English and German works appears as the "*left* oblique" of the French and American writers; when the number of positions given varies from two to eight; when, in fact, each author becomes a law unto himself, even in regard to the meaning of the terms "position" and "presentation," when the "spontaneous evolution" of Denman reappears as the "spontaneous expulsion" of Douglas, or "the spontaneous version" of the Germans, and the process described by Douglas is rechristened and converted into "spontaneous evolution." Is this not indeed "confusion worse confounded?" and it is to this unfortunate misuse of words and carelessness of expression that progress in the science of obstetrics has been so retarded. The subject of a universal pharmacopœia was referred to a special committee at the Medical Congress held during the Vienna Exposition, while the British and the American Medical Associations are both labouring to construct a common system of nomenclature in diseases, but, in midwifery, where reform is most needed, no attempt has been made to devise a common basis of classification, and by mutual consent to limit and define the phrases in common use. Nothing can more hopelessly confuse an American student than the use of an English textbook on obstetrics, unless, as has repeatedly been done in this volume, his attention is especially directed to the "discrepancies of nomenclature."

As the author does not hesitate to claim familiarity with "modern works of approved merit, either British or foreign," it is not without surprise that we read of the "peritoneal covering of the ovary," for, even if the German language was an unfamilar tongue, as it assuredly is not, the brilliant researches of Waldeyer[1], which have made an epoch in the histology and pathology of the ovaries, should have been familiar to him through the admirable translation which is incorporated into the work on the Diseases of the Ovaries, by Peaslee.[2] That the peritoneum ceases abruptly in a jagged or wavelike line at the border of the ovary is a fact so easy of demonstration that the naked eye is alone needed to bring conviction, while even a low power of the microscope reveals an abrupt change in the character of the epithelial cells. The description of the Graafian vesicle, the contained ovum, and the formation of the corpus luteum evidences throughout complete ignorance of all that has been accomplished in the last decade, which has been so fruitful in observations on the early history of the ovum. The hackneyed *analogy* which is usually drawn between the ovum and a simple organic cell is wanting, and the author has evidently no conception of the real truth, that "this spherical body" differs[3] in *no respect* from any other organic cell in the body, consisting only of a mass of protoplasm with a nucleus and nucleolus, not even possessing at first a cell membrane. The nucleus does in truth disappear soon after impregnation and reappear in each of the cells which are produced by the prolifera-

[1] Waldeyer, Eierstock u. Ei. Leipzig, 1870.

[2] Peaslee, Ovarian Tumours.

[3] "Indem es nicht dem germgsten Zweifel unterliegen kann, dass diese Eier wirklishe einfache Zellen, und die Keimbläschen deren Kerme sind." Kölliker. Entwicklungs Geschichte, p. 28.

tion of the parent cell ("segmentation of the vitellus"), but what is meant by the expression that a "new *embryo cell*" forms in the place of the germinal vesicle which has disappeared, could not easily be explained.

The various theories which have been maintained with regard to the condition of the mucous membrane of the uterus during menstruation are presented in detail, but unfortunately the investigations of Kundrat and Engelman[1] are not considered, and yet their observations made on 217 uteri taken from the bodies of women who were either menstruating or pregnant at the time of death, constitute by far the most valuable contribution which has been made on this subject. The theory of Pouchet that the whole or greater part of the mucous membrane is shed at or between each menstrual epoch, although dismissed by Prof. Leishman with the remark that "this distinguished and able physiologist is rather addicted to jumping at conclusions," contains, nevertheless, *quite as much* truth as the statement made by the author on the same page, that "the separation of the *whole* mucous membrane of the uterus under the name of decidua always occurs at the moment of delivery." The microscope shows, according to Kundrat, that a few days before the menstrual flow is established a proliferation of the cells of the interglandular tissue takes place, by which that portion of the mucous membrane which lies nearest the cavity becomes infiltrated with newly-formed round cells. When the capillary vessels rupture, these cells have already passed through a stage of "cloudy swelling" and fatty degeneration, and this *superficial* portion of the mucous membrane is thrown off during the continuance of the discharge, and for some days after its cessation, so that the time during which the uterus is physiologically quiescent, so to speak, must be much shorter than has heretofore been supposed. If this description is true, and it rests on the most careful microscopic observations, additional weight is given to the theory of Löwenhardt,[2] originating in its turn in the clinical study of cases, viz., that the ovum which is impregnated is not the one which was discharged from the Graafian follicle at the time of the last menstrual epoch, but at the succeeding period, when menstruation is arrested, for it is by the presence of the fructified ovum in the uterus that the process of retrograde metamorphosis of the mucous membrane is checked, and the luxuriant growth inaugurated by which the future nutrition of the ovum is secured by the formation of the placenta. In this way at regularly recurring intervals the uterus prepares for the reception and development of an impregnated ovum, but if this fructification does not take place, the newly-formed tissues of the superficial layer of the mucous membrane undergo fatty degeneration, the capillaries rupture, and hemorrhage results. Regarded in the light of these new contributions to our knowledge of the condition of the mucous membrane during menstruation, the *theory* of Pouchet, confirmed in the main by the microscope and clinical observation, deserves more courteous consideration than it has received at the hands of the author.

At the commencement of the chapter on embryology Prof. Leishman paralyzes all criticism by frankly confessing that "at the risk of trifling inaccuracy here and there" he prefers to respect and repeat the routine errors of our text-books. One curious mistake exists, however, which

[1] Untersuchungen über die uterusschleimhaut. Kundrat u. Engelman. Med. Jahrbuch, ii. Heft. 1873.

[2] Löwenhardt, Die Berechnung u. die Dauer der Schwangershaft Archiv für Gynækologie, Band iii., 1872, p. 456.

shows, by its constant repetition, what a puzzle the whole process has proved to the author; inasmuch as he more than once refers to a "small slit" in the amniotic sheath of the umbilical cord, which gives egress to the pedicle of the shrunken umbilical vesicle, which thus comes to lie outside of the amnion," "a point which the student occasionally has some difficulty in understanding." The puzzle would be to understand how the pedicle could ever get *inside* the amnion, and if the student glances, as he is urged to do, at the admirable drawing taken from Coste's atlas, he will have still greater difficulty in understanding it, until he has had the courage to draw his pencil through the faulty explanation. We have already had occasion to deplore the vagueness with which technical expressions are used by different authors, "every writer being allowed," as Prof. Leishman says, "to attach to a word his own meaning," but, this privilege being granted, we are certainly justified in asking that the word or phrase shall thereafter be used in that sense. Unfortunately the terms presentation and position are employed with the utmost carelessness, indeed it almost seems synonymously, for in speaking of the theories which have been advanced to account for the presentation of the head, allusion is made to the old fancy that "about the 7th month the *position* became inverted, and now for the first time the head was normally beneath;" indeed, the frequency of "presentations of the head" is considered under the title, "causes of the position of the fœtus." In this matter there is no safety, except in reserving the word presentation (Lage) to express the relation which the long axis of the child bears to that of the uterus, while we designate the relation which definite parts of the presenting portion of the child bear to the pelvis as "position" (Stellung). But, as Scanzoni[1] first demonstrated in 1866, the presentation of the child is not fixed and determined even during the last weeks of pregnancy, spontaneous changes taking place with great ease, and in illustration of this fact he records a case where within five days the fœtus made six complete revolutions or somersaults, finally presenting by the head when labour commenced. Credé[2] found that in only seven out of 240 pregnant women did the presentation remain constant during the last months of pregnancy. It is but natural that owing to the greater tension of the uterine and abdominal parietes these movements should occur less frequently in primiparæ than in women who have borne children, but that they do often occur is proved by the observations of Hecker[3] and Schröder,[4] and this fact possesses more than a mere scientific value, for on the facility with which these changes can be accomplished depends the success of the most conservative operation in obstetrics, viz., version by external manipulation alone; nor is it to be wondered at that this method finds scanty mention when the author has either entirely overlooked, or is ignorant of, this important fact of the frequency of this spontaneous change of presentation, and the ease with which it can be artificially accomplished.

It is again necessary to call attention to the condition of the cervix uteri during gestation and at the time of parturition. It is curious to trace the successive steps by which the theory, that the cavity of the cervix is encroached upon and converted into the body of the uterus, has been gradually disproved, until now the modified teachings of Stoltz and Cazeaux[5]

[1] Wiener Medicin. Wochenschrift, 1866.
[2] Credé, Observ. de fœtus situ inter graviditatem. Leipsiæ, 1862–64.
[3] Hecker, Klinik d. Geburtskunde, 1861, Band i., p. 17.
[4] Schröder, Lehrbuch der Geburtshülfe, p. 49.
[5] Cazeaux, Midwifery, p. 111.

are generally accepted, according to which "the whole length of the cervix disappears during the last fortnight, being lost in the cavity of the body." Matthews Duncan[1] goes one step further and states that the complete obliteration of the cervical canal takes place during the last *few days* of the ninth month, being effected by contractions of the uterus, which are usually painless. It is to Dr. Isaac Taylor[2] of New York that the credit belongs of having shown, in 1852, that, so far from being shortened or effaced at the time of labour, the cervical canal retains its whole length, the distance of the os uteri internum from the os externum being, as both Taylor and Braun[3] assert, rather increased than diminished at the end of pregnancy. Nor does this assertion of Dr. Taylor rest on a mere dictum, but it is supported by twenty-five morbid specimens taken from women who died at full term, which "proves that the cervix uteri is of the same length, and sometimes even longer than at the time of conception,"[4] indeed a careful examination of post-mortem specimens, and a study of the relationship of parts in obstetric operations cannot fail to bring convincing proof of the truth of this assertion.[5] An *apparent* obliteration of the anterior lip of the intravaginal portion of the cervix is caused in primiparæ, as Schröder[6] has demonstrated by the fact that "the entire anterior arch of the vagina is forced downwards by the head, which has already entered the true pelvis, or which has descended even as far as the pelvic outlet. By this means that reflection of the mucous membrane which forms the anterior vaginal cul-de-sac is effaced, so that the mucous membrane joins the anterior lip on a level with the external os, and the anterior part of the vaginal portion of the cervix disappears. But this does not prove that the *cervical canal* has disappeared, . . . for in order to pass the examining finger into the body of the uterus, it must traverse the entire canal, when it will be evident that it really measures about three cent." The diagrams showing the condition of the cervix during gestation are borrowed without acknowledgment from Schultze's[7] magnificent atlas, which has been freely used to furnish illustrations for the work with but sparing recognition of the source from which they have been drawn. The drawing of the fœtal skull showing its diameters is possibly strictly original, the elongated and curiously developed occipital protuberance suggests only the photographs of fœtal skulls with which Ahlfeld[8] has adorned a lately published brochure, in which he endeavours to show that this malpresentation depends upon an abnormal form of the head by which the antero-posterior diameter is prolonged. This curious type of cranial development was a constant puzzle until a close examination of the text showed that the drawing was far easier to understand than the principle according to which the diameters are drawn; for the occipito-frontal, "the long diameter of the oval cranium," starts not from the posterior fontanelle, although there is no doubt that "this is what most modern writers who are exact in the matter understand by the term occiput," but from the occipital protube-

[1] Duncan, Researches in Obstetrics.
[2] Isaac Taylor, Facts in Relation to Placenta Prævia, p. 4. New York, 1865.
[3] Braun, Lehrbuch der Geburtshülfe, p. 109. "Das anatomische orificium internum von äussern muttermünde üter 3/" weit absteht.
[4] Taylor, The Mechanism of Spontaneous Active Uterine Inversion, p. 35.
[5] Lott, z. Anat. u. Physiol. d. Cervix Uteri. Erlangen, 1872. Braune D. Lage, d. Uterus u. Fœtus am ende d. Schwangerschaft. Leipzig, 1872.
[6] Schröder, op. cit., p. 88.
[7] Schultze, Wandtafeln z. Schwangersch. u. Geburts. kunde.
[8] Ahlfeld, Die Entstehung d. Stru. u. Gesichtslagen. Leipzig, 1873.

rance, while in the same drawing the *occipito*-mental diameter is drawn, not from this protuberance, but from the *posterior fontanelle*, an "*unfortunate discrepancy*" in the understanding of the word *occiput*, which we will hereafter find causes serious embarrassment and confusion in the description of the mechanism of labour.

Before considering the question of superfœtation, the author very justly insists on greater accuracy in the use of terms, and distinguishes between superfœtation and superfecundation; but by mistranslating a passage from Scanzoni, he has in reality only increased the confusion which already exists. Scanzoni[1] does *not* say that superfœtation "occurs after the formation of the decidua, while superfecundation occurs before that membrane is developed," but he merely quotes from Kussmaul,[2] whose admirable work contains nearly all that is even yet known on this subject. In this the distinction is clearly drawn, viz., superfecundation is the second conception (nachempfangniss) by a subsequent act of coition occurring during the first menstrual or ovular period; while superfœtation takes place when impregnation is effected at any time after this period. The possibility of superfecundation occurring both in the lower animals and the human female can scarcely be questioned, while the main argument against accepting the so-called cases of superfœtation is not the obstacle which the decidua opposes to the passage of the spermatozoon, for the intimate union of the vera and reflexa does not occur until the third month, but the fact, that during pregnancy the function of ovulation is temporarily arrested, at least the statements of such careful observers as Kiwisch[3] and Virchow[4] agree in so far as they have never found any trace of a recently ruptured Graafian follicle in the ovary of a woman who has died shortly after childbirth, and indeed Scanzoni[5] is almost alone in his assertion that the periodic maturation, and occasionally the rupture of the ovisac, *may* take place during pregnancy. The author expresses a most guarded judgment as to the possibility of superfœtation, and as a good illustration of the nervously conscientious manner in which most questions are summed up, we give the passage *in extenso*—

"The subject is, however, so veiled in obscurity that we hesitate to deny the possibility of error, or to admit unreservedly the doctrine of superfœtation. At the same time we must not urge too far mere improbabilities as against rational proof. Much we admit must be established in regard to the matter before the doctrine can be expected to obtain universal credence; but we apprehend that the confident opinion of those who reject it, in the face of ascertained facts, is, to say the least, decidedly premature."

But certainly no one can complain of any uncertainty of expression in the discussion of the causal relation which exists between ovulation and menstruation, for it is distinctly stated that "when the ovaries have been removed the *invariable and immediate cessation* of menstruation has resulted." So far as we know there exist but two cases in which the normal ovary has been removed from the human female, and, however we may regard these operations in the light of science and humanity, we are nevertheless justified in availing ourselves of them as contributions to ex-

[1] Scanzoni, Lehrbuch d. Geburtshülfe, p. 211, 1872.
[2] Kussmaul, Von dem Mangel, der Verkürmmerung u. Verdopplung der Gebärmutter, p. 273.
[3] Kiwisch, Geburtskunde, Bd. 1, S. 216.
[4] Virchow, Gesammelte Abhandlungen.
[5] Beiträge z. Geburtskunde, Bd. iv. p. 311

perimental physiology. The history of the first operation performed by Dr. Battey,[1] of Georgia, on a patient, aged 30, whose sufferings at the time of menstruation were so severe, and her health was so impaired, that it was deemed advisable to artificially produce "the change of life" by extirpating the ovaries. In the subseqnent history of this case it is stated that, although "the patient has improved wonderfully in her health and spirits," she had nevertheless menstruated regularly since the removal of both ovaries, the discharge lasting sometimes only one day; but at the last period, the sixth since the operation, the flow was more profuse than she had ever experienced before." That Prof. Leishman should not have seen the report of this case and that performed by Dr. Westmoreland,[2] of Atlanta, is not to be wondered at, but surely he must be familiar with the histories recorded by Spencer Wells, Peaslee, and Atlee, the last of whom mentions a case in which he removed the remaining ovary from a patient on whom Mr. Clay, of Manchester, had performed ovariotomy, and yet two years after the operation menstruation took place regularly every month; or the still more remarkable case reported by Dr. Storer[3] in which the uterus itself, as well as both ovaries, were removed; and, nevertheless, twenty-six days after the operation a sanguineous effusion occurred, lasting thirty hours, being evidently an attempt to re-establish menstruation. But instances multiply, and while we are willing to employ the term "metrostaxis" to indicate a bloody discharge from the vagina, occurring after the removal of the ovaries, it is not hypercritical to insist on some modification of such statements as that which the author has made.

We approach now that portion of the work which bears most clearly the impress of the independent and earnest spirit of investigation which has already made Prof. Leishman's name familiar to all those who have especially studied the mechanism of parturition. The appearance of the little brochure, before alluded to, by the elder Naegele, paralyzed, singularly enough, for a time, any further research in this subject. So careful had been the clinical study, and so clear was the analysis of the phenomena of labour, that the impression became general that this problem had been solved, and the value and import of each factor determined. It is, perhaps, more to Dr. Leishman's essay, published in 1864, than to any other work, that the attention of the profession was redirected to the physiology of this process, and that the gradual change which has taken place in the descriptions of the mechanism of labour is to be traced. For this he deserves and has received the warmest thanks and acknowledgments; but while the essay presented abundant evidences of profound research in the historical portions, and a careful clinical study of each step in the process, it was, nevertheless, not free from serious faults, more especially inaccuracies of expression, which exposed him at that time to sharp criticism on the part of those who had most thoroughly studied this subject. Although in part acknowledging the justice of these criticisms, he has in many instances refused to accept them. For instance, while confessing that the definition of the term presentation which is given by Prof. Hodge, viz., "that portion of the fœtal ellipse which is towards the centre of the pelvis, or of the dilated vagina, in the different periods of labour," is "mathematically more cor-

[1] Robert Battey, Normal Ovariotomy, a paper read before the Georgia Medical Association.

[2] Westmoreland, Atlanta Medical Journal, 1873.

[3] Horatio R. Storer, Successful Removal of the Uterus and both Ovaries by Abdominal Section; Amer. Journ. of Med. Sci., 1866.

rect," he nevertheless "owns to a preference for the meaning which is attached to the word by Dr. Tyler Smith, who defines it as that "portion of the fœtal head felt most prominently within the os uteri, the vagina, and the ostium vaginæ in the successive stages of labour." The manifest advantages are so great in the use of the term presentation to express the relation which the head or presenting part actually bears to the maternal parts, rather than employing it to describe the varying relation which it bears to the examining finger, that it would be hard to defend this last definition on any ground; but yielding this point, we should then logically speak of the presentation of the right or left parietal bone, or whatever may be the actual part with which the finger first comes in contact, and indeed, Hohl,[1] and a few other German authors who are consistent, speak always of the different "presentations of the parietal bone" (Scheitelbeinlage). A curious significance is attached to the term "vertex," which the author defines as "a point midway between the two fontanelles," but "owing to the infinite varieties which obtain in the comparative position of the two fontanelles as regards the pelvic axes, the term vertex is used to include the sagittal suture in its whole length, and on either side that portion of the parietal bone which lies between the suture and the protuberance." The usual definition of the term, viz., the region around the posterior fontanelle, or, as Prof. Hodge says, "as regards the scalp the portion where the hair parts," is rejected because this is not "the portion of the head which is highest in the erect posture;" but in order to avoid error we must remember that at the commencement of a normal labour the fœtus does not occupy an erect posture, but is doubled on itself so as to form the fœtal ellipse, the head being forcibly flexed on the chest, and in this attitude it is the region around the posterior fontanelle to which, as the lowest (that is, highest, the child being inverted), the name of vertex should be given. Any great deviation from this "habitus," so that the head presents (as fig. 100 represents) with the biparietal plane (viz., a plane "passing from the posterior to a point just in advance of the anterior fontanelle"), and subsequently the occipito-frontal plane corresponding with the plane of the superior strait, constitutes in so far an abnormal labour, a deviated vertex presentation, as the German writers say; one which, it is true, the first labour pains usually convert, by flexing the head, into an ordinary vertex presentation, but at the same time one which, if certain conditions be present, may result in a brow or face presentation.

While the author does not admit the existence of any biparietal obliquity at the superior strait, he nevertheless believes that in typical cases there is a certain amount of both biparietal and pelvic obliquity at the outlet, neither of which are granted by Künecke, Hodge, or Duncan, but which are still maintained by Schröder and others of the German school. These obliquities at the outlet are fortunately, as the author writes, of comparatively trifling importance. In one other point in the admirable description which Prof. Leishman gives of the mechanism of labour, we are not in accord, viz., with regard to the importance of the ischial spines in determining the rotation of the head, the remark of Tyler Smith being quoted with approbation, that "the key to the pelvic mechanism in an obstetric sense may be said to be the spinous processes of the ischia." While we are ready to admit that the conformation of the anterior inclined plane is such as to facilitate the process of rotation when once inaugurated, it is

[1] Hohl, Lehrbuch d. Gebertshülfe, Leipzig, p. 418.

nevertheless true that it is to other mechanical forces that we must look for an explanation of this important movement, which is, we believe, due to the unequal resistance which the descending occiput encounters from the shallow anterior wall, as compared with the extended bony and muscular structures which form the posterior wall of the pelvis. Hence the lowest portion of the occiput—normally the posterior fontanelle—or "guiding point" must inevitably be driven in the direction of the least resistance, viz., anteriorly, and its movement in this direction is encouraged by the so-called "rifled" or screw-like character of the anterior pelvic plane.

In considering the occipito-posterior positions attention is thus called to the fact that rotation takes place only after the descent and complete flexion of the head. "The more marked the flexion of the head, and the nearer the posterior fontanelle is to the examining finger, the greater is the confidence with which we anticipate a natural and satisfactory rotation," so that whether we adopt the theory which refers rotation of the occiput anteriorly to the preponderance of resistance posteriorly, or that of the author who ascribed it to the relation which exists between the forehead and the spine of the ischium, the important practical point can still be deduced, that *no attempt should be made to force this rotation*, which naturally cannot take place until the occiput has reached the pelvic floor, the only assistance which is justifiable being a manipulation by which the forehead is elevated while the occiput is brought down, when the labour in the *vast majority* of the cases is completed by a spontaneous rotation of the occiput anteriorly.

In the chapter on the treatment of transverse presentations, we find no mention made of the possibility of effecting version by external manipulation *alone* before the rupture of the bag of waters. Indeed, there is nothing which is more conspicuously faulty in the treatise than the entire absence of all notice of external manipulations, which constitute one of the greatest advances which have been made in obstetrics. It is, indeed, difficult to overestimate the value of this method of examination by it without even introducing one finger into the vagina. The duration of pregnancy, the presentation, position of the child, and the character of the pains, can be ascertained, the placenta delivered, transverse presentations can be converted into presentations of the vertex, and of late[1] even face presentations have been transformed into presentations of the occiput. In the lying-in wards of the large hospitals abroad, where each woman is examined repeatedly before delivery and the presentation recorded, cross-births are frequently rectified by the students on duty in the wards, before the rupture of the bag of waters, by external manipulation aided by a postural treatment of the patient. The only reference to this method that we can find is contained in this statement, "that the directions which Wigand gives include elaborate but, we fear, impracticable instructions as to the manner in which we should proceed," with regard to the position of the patient, etc.; and yet Martin,[2] Braun,[3] and others bear the most emphatic testimony with regard to the value of this method. During the existence of any epidemic of puerperal fever, the acquisition of the needed knowledge and the management of the case by external manipulation

[1] Schatz, Die Umwandlung v. Gesichtslage zu Hinterhauptslage durch Alleinigen Ausseren Handgriffen Arch. f. Gynækologie, B. v. p. 328.
[2] Martin, Beit. z. Gynækologie, Jena, Heft 2.
[3] Braun, Lehrbuch d. Geburtshülfe, p. 783.

alone become especially valuable, because by this means the possibility of infection by the hand of the accoucheur can be eliminated.

So many points of interest suggest themselves in the consideration of the remaining chapters that it is hard to select that which is most important, but the already extended limits of this review warn us to be brief. A few words, however, with regard to the chapter on the forceps. The use of the *straight* forceps is advised in all cases except when the head is at the brim or in the upper third of the pelvic cavity. But in order to increase their working range Prof. Leishman prefers an instrument which is larger and stronger than the usual models. The line of argument which the author adopts is one which hardly admits of any refutation. I like the straight forceps because I have a "personal predilection for them," because "I have been trained to them," and because "there can be no mistake made between the upper and lower, the anterior and posterior blade," and I "recommend them to young practitioners, who generally possess but one pair," because they will leave him in the lurch when the head is at the brim, while the double curved instrument will carry him safely through every emergency—"being equally efficient in the hands of those skilled in in its use," while the "danger of slipping is less when used by the inexperienced." So far these arguments are certainly not forcible, but one objection which is urged against the double curved instrument is possibly true, viz., that, if it is necessary to alter the position of the head by forced rotation, this can only be effected by a straight instrument. We reply that, omitting the manipulation for the rectification of position described by Scanzoni[1] in which an instrument with a pelvic curve is used, we will only quote the author's own limitations to the performance of the operation: "In occipito-posterior positions we may succeed in amending the position of the head in two classes of cases, 1st, when the head is free at the brim, when a double curved instrument must be used, as the author himself distinctly states, and 2dly, when the head has reached the floor of the pelvis, "when the forceps are quite inapplicable," for then the vectis or the finger is to be used to promote flexion, and to allow rotation to take place spontaneously. Indeed, on all sides we hear protests against the forced rotation of the head anteriorly in occipito-posterior positions, and Barnes[2] only reaches the prevailing opinion when he writes: "The head can be born very well, preserving the occipito-posterior position throughout. Nor does the case call for any amount of force. By aid of the forceps the delivery is nearly as easy as when this instrument is applied to the occipito-anterior position." Being so prejudiced, then, in favour of the short forceps, it is not unnatural that the author should view with apprehension any other form of the instrument, and hence he displays a nervous anxiety when speaking of the long forceps, which to the American practitioner, who, in general, knows no other instrument than the long French forceps, or at most Simpson's modification of Naegele's, cannot but have a serio-comic air. "No one should take the long forceps into his hands without a sense of responsibility much greater than attaches to the ordinary operation." "The operation by the long forceps is one to which, as a rule, a considerable amount of difficulty and danger is attached; it must be regarded with apprehension as one beset with difficulties and dangers." We must not forget, however, that the author restricts the use of the long forceps to

[1] Scanzoni, Lehrbuch d. Geburtshülfe, vol. iii. p. 191.
[2] Barnes, Lectures on Obstetric Operations, p. 79.

those cases where the head is either above the brim or in the upper third of the pelvic canal, and hence transfers the dangers of the condition which necessitates an operation to the *form of instrument* used. But aside from this, there can be, we think, no doubt but that the application of the forceps at the superior strait, or even on the movable head, is an operation which has found far greater favour in this country than the performance of version, and hence has developed an exceptional degree of skill in the use of the forceps in these cases. This is no place to discuss the comparative merits of version and the use of the forceps in these cases; our object is only to show how much greater range and latitude the application of the forceps at the superior strait has in this country as compared with England or the Continent.

It is with a hesitation which betokens a full appreciation of the difficulties of the subject that Prof. Leishman approaches the consideration of that protean malady, puerperal fever. It is evident that the author has studied thoroughly the history of this disease as portrayed by English writers; and what wonder is it that, staggered by the contradictory and positive statements, he can only conclude that the "type of the epidemic changes" when one observer states that "under the most heroic use of the lancet almost all of his cases recovered; while a second has observed that when bloodletting was practised almost every case died; and still a third describes under the name of puerperal fever, an affection so trifling that it was usually checked by a single dose of Dover's powder." In this short quotation we have revealed the secret of the utterly uncertain and confused manner in which this whole subject is presented, resulting from mere clinical observation. No attempt has been made to study the true pathological character of the process; the range of view is narrow; and the work has been done with a feeble and groping hand. Although the "puerperal process" still rests under a dark cloud of uncertainty, necessitating as it does for its complete understanding a knowledge of the entire process of septic infection, nevertheless, the labours of Virchow, Buhl, Hecker, and Schröder have at least furnished a sure basis for subsequent investigation by emphasizing the fact that this morbid process has in it nothing individual, or *sui generis;* but is merely an expression, modified by the anatomical pecularities of the parts, of certain results which must follow the introduction into the economy of septic material. It has heretofore been the fatal genius of obstetrics, that there have been so few workers in this field whose knowledge of pathological anatomy has been at all commensurate with their ability as obstetricians, and, unfortunately, their vague and general theories, in regard to the essential and intimate nature of morbid processes, have carried with them the weight and authority which justly belonged to their *clinical* experience. Looked at in the light of modern pathology, the "puerperal process" is seen to conform to the general laws of septic infection, as evidenced in other parts of the body, and although the details of this condition are still in many respects undeveloped and unexplained, there is no more obscurity hanging over puerperal fever than over surgical fever. It is only when we have failed to gain a comprehensive view of a disease that we are inclined to magnify and exalt each individual symptom into a distinct process, or to increase indefinitely the special forms which it may assume. Prof. Leishman states repeatedly his belief that puerperal fever depends upon the absorption of some peculiar poison, but fails altogether to connect the general phenomena of the disease with the pathological

anatomy of the process. It is unquestionably true that in certain rare cases, usually occurring in the midst of an epidemic, death occurs before the development of any material lesion perceptible to the eye, but in those cases where the system is overwhelmed by the introduction of the poison, the microscope reveals, as Hecker[1] has shown, a cloudy swelling of most of the constituent parts of the organs, fatty degeneration and even disintegration of the tissues.

In conclusion, while we have not hesitated to offer a few criticisms suggested by a careful perusal of the volume, we are nevertheless fully aware that we have ventured in some instances on debatable ground, and we have not failed to recognize the ability and fairness with which statements not in harmony with those which we have advanced are supported by the author. But we earnestly feel that in accepting the task of reviewing a book of this character we are conscientiously bound to offer such suggestions and criticisms as may at least lead to a careful revision—possibly correction—of certain portions of the work. It is because the volume is one of unusual merit that we have devoted so much space to its consideration. For some time past no work has appeared which could fairly claim to represent the advanced school of English obstetrics. It is only reasonable to assume that this work will for many years occupy this position. Its scope is extensive, embracing not only the physiology and pathology of gestation and parturition, but also a full description of the disorders of the puerperal state, and the care of the newborn child. It is eminently rich in illustrations, not old, worn-out pictures which have descended from one text-book to another, but original drawings, or reproductions of large plates, including among others that admirable series by Prof. Schultze, which now appear for the first time in this form. The style is neither dull nor didactic, but possesses peculiar freshness and vigour. As Prescott and Motley have transformed histories from a mere recital of facts—a collection of dates—to glowing, living, reproductions of long-past ages, so too of late certain medical authors have proved that even the dry details of disease can be vivified, and the mind startled into an appreciation of old facts by their being presented in a new and vital form. This charm the work we are considering possesses, and this, conjoined with its real and absolute merits as a reliable and comprehensive work on obstetrics, will make its perusal not a task but a satisfactory pleasure to many who have awaited the publication of such a system of midwifery. W. F. J.

ART. XXI.—*Sex in Education, or A Fair Chance for the Girls.* By EDWARD H. CLARKE, M.D., Member of the Massachusetts Medical Society; Fellow of American Academy of Arts and Sciences; late Prof. of Materia Medica in Harvard College, etc. 16mo. pp. 181. Boston: James R. Osgood & Co., 1873.

THIS little volume is a reproduction and enlargement of a lecture delivered before the New England Women's Club, in Boston, about a year ago. We are not surprised to learn from the author's preface that it

[1] Hecker, Monatschrift f. Geburtskunde, B 29, p. 321.

excited at the time much discussion. Indisputable as we believe to be the physiological premises laid down, logical as are the inferences drawn, and consonant as are the cases adduced with the observation of nearly every physician, the conclusions reached are too diametrically opposed to the claims and wishes of a certain movement of the day, not to provoke vigorous attack. The very unanswerableness of the argument naturally adds to the wrath of those whose darling theories it so utterly overthrows. That this book, containing so much matter in so small compass, will convert the more radical advocates of extreme "women's rights" views, we have no expectation. What we do confidently expect, however, is that it will help many a good and intelligent woman to a better understanding of her own nature, especially in its distinctive traits. Once let such women learn the facts here so clearly set forth, and two very weighty results may reasonably be looked for: first, a better appreciation of woman's dignity and responsibility, with a disposition to exult in and glorify her womanhood, rather than to ignore, belittle, or deplore it, a realization of the truth that her ideal excellence lies not in her likeness to man but in her unlikeness; second, an understanding of the prevalent mistakes in the modern education of girls, with all their terrible consequences, and a knowledge of the means towards prevention.

The exposure here made of the grievous faults in our ordinary education of girls, though not provoking quite so much bitterness of retort as does the broad and general demonstration of sexual unlikeness, is yet certain to meet much hostile criticism. It is mortifying to us all, and especially to the teachers themselves, many of whom represent the highest culture of the time, to be told that we have been and still are pursuing a course of educational discipline which from its influence on posterity might not unjustly be termed murderous. And we may here remark that it is no sufficient answer to Dr. Clarke's views and observations, to say that some intelligent persons have failed to perceive any ill results from that sort of female education which is here opposed. The positive testimony of such a man as our author is not to be refuted by any amount of merely negative testimony. We should not forget, moreover, that the generally intelligent and judicious observance of the ordinary laws of health in some of our higher academies and colleges for girls, might be expected to lessen or to postpone for a time the penalties sure to follow infringement of the special laws of sex. True wisdom surely dictates alike to teachers and parents, that education, in the future at least, shall conform to, rather than defy, all physiological rules For the errors of the past, for which the present and the coming generation are paying such bitter penalties, we have no right to blame teachers only. All educated people, and perhaps our profession especially, are accountable for this grievous blundering.

The modern educational mistake, according to our author, consists in employing for girls the identical methods used for, and perhaps well adapted to, boys. Errors there are affecting the two sexes alike, but these do not come so especially within the purpose of the work before us. The facts to which Dr. Clarke directs attention as having been most harmfully ignored, are, that during her school days the girl is passing through the most critical change of her life, and that, in developing womanhood and establishing a new function, the vital powers are severely taxed. Notwithstanding this fact, as much or even greater mental labour is performed by the girl as by her brother, whose pubescence occurs with scarce any disturbance or additional expenditure of vitality. Again, the fact that for a

time during each month the girl experiences a great, and at that time, unaccustomed, drain upon her vitality, has not been allowed to lighten her tasks a particle. It is this total disregard of the laws of her being that renders the educational methods of the day so calamitous to the American girl and to posterity.

Dr. Clarke emphatically proclaims the non-existence of any question of superiority and inferiority between the sexes. It is not needful to assign to them different studies, but simply that they pursue them by different methods. Let the girl learn all that the boy learns, but let her learn in a girl's way and not a boy's. The fullest and most harmonious development should be for each sex the aim of education. To secure this, Nature must be recognized and respected, not ignored and contemned. "Educate a man for manhood, and a woman for womanhood," is the apothegm by which Dr. Clarke sums up his views.

After some such general expression of his opinions, Dr. Clarke proceeds to a clear and forcible exposition of the physiological principles which have a bearing upon education. The human organism, he remarks, may be regarded as made up of three systems, the nutritive, the nervous, and the reproductive. The first two are identical in man and woman; the last is widely different.

> "Woman, in the interest of the race, is dowered with a set of organs peculiar to herself, whose complexity, delicacy, sympathies, and force are among the marvels of creation. If properly nurtured and cared for, they are a source of strength and power to her. If neglected and mismanaged, they retaliate upon their possessor with weakness and disease as well of the mind as of the body." (p. 33.)

In childhood and old age the differences of sex are comparatively slight. The change from childhood to womanhood, amounting as it does to a complete physical and moral revolution, attended with rapid growth of important organs and the establishment of a new function, occurs or should occur during the very same years in which the tasks of the school-room are powerfully stimulating the brain to growth and molecular activity. It is obviously true that a rapid development of different systems at one time cannot go on without making very heavy demands upon the vitality, and without great danger of some portion of the organism failing to receive its needed nutrition. The growth and activity of the reproductive organs cannot be postponed to a more convenient season. If delayed somewhat, by diversion of vital power, it is at great risk of permanent imperfection. The proper performance of the menstrual function, especially at its beginning, requires almost the undivided energies of the body. It is in every respect of the highest importance to the whole future life of the girl that the habit, so to speak, of perfectly normal menstruation should be formed at the outset. This, it is obvious, requires not merely the appropriation of sufficient vital force to insure the natural evolution of the organs, but a monthly intermission or diminution of activity in other systems.

Imperfect development of the reproductive system, moreover, means imperfection elsewhere; for we are so made that all the different parts of our being act and react upon one another. True education is that which produces a symmetrical and harmonious development of the whole wonderful compound of mind and body. Education which is unsymmetrical and imperfect affects, too, not the individual alone, but posterity.

All growth and all activity, bodily, mental, and moral, depend upon molecular change. When a muscle is used, cells die, are removed and

replaced from the blood by new ones. When we think or feel, nerve-cells in the brain suffer the same process. The one essential or criterion of healthy or physiological life is, the deposition from the blood in every part of the body of sufficient material for new cells to maintain growth and to repair waste, and the simultaneous removal of effete matter. If this twofold work be imperfect in any organ, arrest of development, or imperfect action, or structural degeneration must follow. To the perfection of the work are necessary rest, nutriment, and excretion. If time is not allowed for repair of waste, or if the blood does not provide enough cell-material, or remove from the organs and from itself dead matter, healthful activity cannot long continue. Menstruation when excessive robs the system of blood needed for nutrition, and when deficient fails to remove effete cells.

From these physiological considerations the author proceeds, in a chapter headed "Chiefly Clinical," to show how the rules of health are violated in the education of girls, and in some forms of women's labour. Without at all claiming for unwise educational methods the sole responsibility for the delicacy, weakness, and sterility of American women, Dr. Clarke believes such connection to be very frequent. Throughout the middle and upper classes of our society we find among women little vigour and elasticity, little power of endurance, a strong tendency to neuralgic, hysteric, and other nervous troubles, almost universal menstrual derangement, with a very serious loss of the power to bear children, and to suckle them. So great is the last-named deviation from health as to point almost to the extinction of maternity in our native women, before many years.

In the schools, seminaries, and colleges for girls in the country, no heed whatever seems to be paid to the physiological laws which pertain to sex. Not only is the amount of study usually more than should be required of young persons still growing, but the method is one of rigid unvarying regularity. No account is taken of those periods when nature needs all the available power for the performance of a new and arduous function. Day after day the pupil must work with her brain, and stand, and walk, and exercise, just as if periodicity had no place in her system. One result of this attempt to ignore natural laws, which Dr. Clarke has often observed, is menorrhagia. Instead of resting both body and mind for a few days, the poor girl is studying day and night, and standing at her recitations. The very lassitude from which she suffers compels severer brain-toil, lest she should fall behind her comrades. Hence the nerve-force which should give tonicity to the uterine capillaries is consumed in the cerebral cells, and exhausting hemorrhage occurs. This of course places the system in a still worse position for the next period. But there is no provision made in the school regimen for periodical rest. If forced to be idle, the hours lost must be made up at any cost, lest the pupil should feel disgraced and humiliated. Practically, this terrible routine is maintained till the health is so unmistakably broken down as to compel removal from school. In other cases amenorrhœa results, either from the inability fully to establish the function, or as a sequel to excessive hemorrhages, and arrested development, poisoned blood, and multiform ill-health follow. Not only is there often a palpably incomplete growth of the reproductive organs, but even a deficient manifestation of the distinctive traits and characters of womanhood. This undeveloped sexuality is, however, sometimes accompanied by pretty good general health, and is then not generally recognized as a result of mismanaged training.

Another class of cases noted by Dr. Clarke among women educated at the higher female schools is one in which, unlike the preceding, the sexual system receives its proper share of vital force, but at the expense of the nervous. There not being enough force properly to carry on growth, sexual development, and mental activity together, in these cases it is the nervous system that fails to receive its needed nutrition. Headache, insomnia, neuralgia, hysteria, chorea, imbecility, and insanity are among the results.

The evils due to masculine methods in female education are aggravated by the fact that this ignoring of the feminine peculiarities is almost as prevalent at the pupil's own home. Late hours and social dissipations, after and even during school years, are allowed with little reference to the physical condition.

Dr. Clarke has presented in this chapter the records of a number of his cases, selected to illustrate the connection between female ill-health and educational methods. Of course we cannot expect that such connection shall be mathematically demonstrated; and those who uphold existing methods can deny its existence. But we believe the unprejudiced reader will recognize in these cases most impressive warnings against the attempt to ignore and defy natural laws.

Dr. Clarke has supported his views by very pertinent quotations from Drs. Anstie, Maudsley, Nathan Allen, T. W. Fisher [Plain Talk about Insanity], and S. Weir Mitchell. His own summing up of the results of female education is too good not to be quoted.

"It has been reserved for our age and country, by its methods of female education, to demonstrate that it is possible, in some cases, to divest a woman of her chief feminine functions; in others to produce grave and even fatal disease of the brain and nervous system; in others to engender torturing derangements and imperfections of the reproductive apparatus that embitter a lifetime. Such, we know, is not the object of a liberal female education. Such is not the consummation which the progress of the age demands. Fortunately, it is only necessary to point out and prove the existence of such erroneous methods and evil results, to have them avoided. That they can be avoided, and that woman can have a liberal education that shall develop all her powers, without mutilation or disease, up to the loftiest ideal of womanhood, is alike the teaching of physiology and the hope of the race." (p. 116.)

For the next chapter of Dr. Clarke's little book, entitled "Coeducation," it is probable that we are indebted to recent movements looking towards the admission of female students into the colleges and universities hitherto devoted to the instruction of young men. The sense in which the word is at present most used, and in which it meets the author's opposition, is that implying identity of method as well as personal association, and the attainment of the same ends. Identical coeducation is and must be a violation of the physiological principles just illustrated. Boys are capable of, and best educated by, continuous and regular activity. Girls require for their best and healthful development periodical rest. Persistence is the rule or method of one sex, and periodicity that of the other. We have seen the harm done by allowing girls associated together to study according to masculine methods, even though all suffer equally under the same interruptions. We can easily see how much the mistake must be aggravated by bringing the girls into close contact and hourly competition with boys, who suffer no periodical disturbance and need no remission. Yet, in spite of the most obvious physiological objections, this very form of coedu-

cation is just now clamored for by many misguided women and their male followers.

That another kind of coeducation may be a really good thing, Dr. Clarke is prepared to admit. Social nearness and companionship, even in pursuit of the same studies, may have wholesome influences, provided each sex studies after its own manner. But the moment coeducation becomes identical, the girls suffer not only from the radical unfitness of the male method to their constitution, but also from the too exciting stimulus to over-work which is found in the emulation sure to arise between the sexes.

"The unconscious fires that have their seat deep down in the recesses of the sexual organization will flame up through every tissue, permeate every vessel, burn every nerve, flash from the eye, tingle in the brain, and work the whole machine at highest pressure. There need not be, and generally will not be, any low or sensual desire in all this elemental action. It is only making youth work over the tasks of sober study with the wasting force of intense passion." (p. 135.)

The result is a diversion of vital forces needed by the reproductive system, from this system to the brain. The tendency towards sterility thus produced is again referred to by our author. That an influence in this direction is exercised by inordinate cerebral activity is regarded as well established. Especially is it true of the female sex, owing to the greater complexity of the reproductive mechanism in woman. The tendency, as has been pointed out by several writers and already verified by statistics to an alarming extent, is to throw the future of our country into the wombs, not of our most cultured and intellectual women, but of the coarse, the ignorant, and the natives of foreign lands. The continuance and growth of this tendency can be checked in one way only—by educating the future wives of our people in accordance with physiological laws. Culture can be and should be acquired, not by the sacrifice of health and activity in any part of the system, but with and by a symmetrical and healthy growth. What is needed, says Dr. Clarke, is "not an identical education, or an identical coeducation of the sexes, but a special and appropriate education that shall produce a just and harmonious development of every part." Then and only then will the refining influences of culture pass as a heritage from generation to generation.

Although the time during which identical coeducation has been tried in some Western colleges has been too short to produce more than the first fruits, Dr. Clarke believes that the experiment already begins to exhibit its natural results. Some of the college officers, in reporting good effects, have evidently taken much more thought of other things than of the health of the girl graduates. Nor has their observation extended to the after-life of the female students. Some other observers have testified that the experiment was "intellectually a success, physically a failure." The author's own practice brought him in contact with several graduates, and in all he believes their ailments traceable to the college regimen.

As to the kind of coeducation before referred to as unobjectionable—that which is in its methods not "identical" but "special and appropriate"—the heavy expense required to adapt existing institutions to the new, double system of instruction, amounts at present to a practical prohibition. No attempt at compromise, by adopting a system not precisely fitted for either sex, should be for a moment thought of. The duty nearest at hand is to so far modify the order of study, discipline, diet, and exercise, in our schools and colleges, as to make it conform to physiological requirements,

both general and sexual. Ceasing to make the boy's school the model for all, a separate education, which shall be special and appropriate, can be obtained without extraordinary expenditures.

The precise order of school life best adapted to favour the harmonious development of the female organism in all its parts, can of course be fully settled only by judicious experiment founded on the observation of physiological laws. Dr. Clarke thinks it would be wise to assume at the outset that four or five hours daily is as much study as should be required of a girl from fourteen to eighteen years old; and that absolute rest, or diminished labour, should always be enforced for a few days every month. These periodical remissions, too, should not be allowed to necessitate extra work or loss of standing.

Our author mentions in this connection the instructive fact that a certain employer of women in Boston compels each one to take a monthly vacation of three days, and that, financially as well as morally, he has his reward. In England a recent act of Parliament limits the hours of daily labour for women to a period less than for men.

When we remember the closeness of connection and sympathy between mind and body, and between the brain, or the mind's instrument, and all other organs, and that all are nourished by one blood and vivified by one nervous fluid; and when we reflect upon the magnitude and importance of the female reproductive system, we cannot but wonder at the blindness which has so long practically ignored difference of sex in American education. Even now, in spite of what should seem, when once stated, the plainest teachings of physiology and of common sense, we have among us a clique of men and women by no means destitute of intellectual activity, who not only maintain old error, but loudly demand, not identical coeducation alone, but identical co-work, for woman with man. The mere idea of sex is an offence to them. They proclaim equality with an angry vehemence which will recognize no differences. Instead of magnifying the unlikeness of the sexes, and exulting in the traits which distinguish woman, they seem to be secretly ashamed of womanhood. Perfectly able to perceive the differences between men, fitting one for this sphere or occupation and another for that, they shut their eyes to the much greater difference of sex, and in place of seeking to adapt social life and occupation to the natural endowments of each, they sweepingly deny all distinction, and expressly defy and trample upon all habits and customs founded thereon.

We are not sure but that—as is hinted by Dr. Clarke—the want of respect for and appreciation of their own nature, which we find in many of our so-called "strong-minded women," is itself a sad and striking illustration of ill-directed education. Educated in the same way as boys, allowed and encouraged wholly to ignore their special qualities, they grew up as much like men as much-abused Nature would let them. A vague sense of dissatisfaction with the result, partly disappointment at not becoming wholly men, partly the unconscious protest of their suppressed womanhood, leads to a restless striving after equality. The functions which periodically impair the power of labour are resented as a curse and a drawback. It is not unnatural or unlikely that a persistent diversion of vital force from sexual development and function should, to a certain extent, unsex the woman who from youth to middle age has steadily repressed femininity. That such a one should fail to share, and even deny the existence of, natural womanly feelings and instincts, is surely not very strange. Nor

is it strange that, oppressed with the feeling that, somehow, her own career is a failure, she should be disposed to attack existing arrangements rather wildly.

Dr. Clarke devotes a closing chapter to the "European Way." In this, and in some paragraphs of the earlier chapters, he refers to the magnificent physical development of women in Oriental countries and among the European peasantry. This, however, he found accompanied with an utter lack of intellectual development. General physical and special sexual functions were at their maximum, while mental activity was at a minimum. The error is one diametrically opposed to that common among us. The observations of a lady, travelling in a country no more remote than Nova Scotia, are also cited, as to the wonderful health and great physical development of the children everywhere met. She saw large assemblages of children at certain celebrations, and was filled with amazement at the general robustness and the "quiet, sturdy, self-possessed expression of countenance." The women, too, were observed to be large, straight, and healthy; and the only cause which seemed wholly to explain the phenomena was the general absence of schools!

But it is not alone among the untaught peasantry of other lands that fine physiques are found. Nor do we wish to obtain for American women robustness at the sacrifice of intelligence. Among the wealthy and aristocratic classes of Great Britain and Germany are to be found almost ideal representatives of "perfect woman, nobly planned," equally fitted to adorn society and to form radiant centres of happy homes. Believing that the secret between the almost uniform vigour of foreign, and the equally uniform debility of the American, women of culture, lies in the observance or neglect of natural laws, Dr. Clarke sought for information concerning the training of girls abroad. From the nature of the subject detailed statements were not easily obtainable. From an eminent German physician and from two German ladies, however, particulars were obtained as to the management of growing girls, which fully confirm and illustrate the views derived by the author from physiological considerations. Three points in German education of girls were elicited. First, as a rule, girls are removed from school at the appearance of the catamenia, and thenceforward instructed at home and by private tutors. Second, by immemorial tradition among mothers, the closest supervision is maintained during the menstrual flow. The girl is watched and guarded, obliged to refrain from study, from late hours, excitement, and all but the gentlest exercise; and if delicate is kept in bed three days. Third, school girls are never allowed to go to parties. Pleasant recreation is encouraged, but not heated rooms, late hours, and extravagant dress. One of the correspondents, a lady of high position, who had also lived in the United States, speaks of the early decay of female health and beauty with us, and attributes it to the "recklessness" manifested in the care of girls. She says that German women, as a rule, are as strong and healthy after bearing many children as in youth, and even more so.

Dr. Clarke closes his brief but most valuable work by reiterating his belief that the "loftiest heights of intellectual and spiritual vision and force" are attainable by each sex, and power to be gained in the climbing, if only each will pursue its own proper method.

We cannot leave the book before us without expressing our satisfaction that such a work has been written. It has long been needed; but perhaps would not earlier have commanded attention. Now it is indeed a word

in due season and most fitly spoken. We cannot but hope that the public mind is prepared to receive the wise counsels given. The time has surely gone by when feminine debility was counted as a womanly charm. Could the maxims here uttered be practically applied to the education of even a single generation, the dark clouds that now lower around the future would be broken by gleams of hope and light. B. L. R.

ART. XXII.—*Leçons Cliniques sur les Maladies des Femmes.* Par T. GALLARD. Médecin de l'Hôpital de la Pitié, Officer de la Legion d'Honneur, etc. Avec 94 figuers intercales dans le texte. pp. 792. Paris, 1873.

Clinical Lectures on Diseases of Females. By T. GALLARD.

THIS work will undoubtedly be the means of introducing its author to medical readers outside of his own country. A frequent contributor to French journals, the writer of several articles in the later volumes of the *Dictionnaire Pratique*, and the author of many pamphlets and works of minor importance, he has written nothing, so far as we know, except the article "Uterus" in Costello's Cyclopædia of Practical Surgery, likely to meet the eye of the profession at large. In the work before us he challenges our attention from his official position in a Parisian hospital, and as a labourer in a field already so well worked by his countrymen, Nonat, Aran, and Courty.

In mentioning these well-known authors we do not intend to do Dr. Gallard the injustice of instituting a comparison between his work and theirs. Where aim and scope are so different there can be no fair comparison, and their works are methodical and complete treatises, while this is a simple collection of clinical lectures, covering but a portion of the ground—too illustrative to be concise, too clinical to be methodical—sketching with a free and sometimes discursive hand; it is a volume, none the less on these accounts, interesting to read or instructive to study.

Before examining any particular part of the work, we will say that the spirit of the whole is excellent. That is, it presents those leading characteristics which are to a work what tone, energy, and honesty of purpose are to the man. We find evidence of this healthy action in the preface, in the remarks upon the true relation of the special pursuit of any branch of the profession to the science of medicine as a whole. He justly contemns the course of those who confine themselves exclusively to the study of the diseases of a single organ, and become so absorbed that they finish by ignoring all the rest, and urges his readers to be "first, and above all, physicians—physicians in the broadest sense of the word;" afterwards they may be specialists as they will, but he hopes to see disappear from medicine the specialty which consists of a monopoly of diseases of females by a limited number of persons.

Another instance of this we find in his marked preference for simple instruments and means of treatment. Thus, in directing the mode of making intra-uterine injections, he prefers an elastic catheter and an ordinary syringe, both inexpensive and found everywhere, to double or treble current catheters, or any complicated instrument whatever; and takes

occasion to warn his hearers against "all those pretended improvements which have, for sole result, the complication of a simple and easy operation, and add, without necessity, new instruments to the already too well stocked arsenal of our manufacturers."

Again, in speaking of cauterization by means of the electrical current, after stating that its effects are identical with those of the actual cautery, he says:—

"But I believe that our practice, in all that concerns diseases of females, needs to be simplified rather than complicated, and believing that the interests of science, the interests of the patient, the interests of the practitioner, can only gain by this simplification, you never see me prescribe a method which has no other advantage than a certain impression upon the mind of the patient. The honest physician has no need of these theatrical proceedings of which certain specialities, and particularly the one now occupying our attention, have never been able to divest themselves."

We do not find that he has either any pet theories to hobby-ride at the expense of all other doctrine, nor any favourite remedy to the exclusion of all others, and where his views do not coincide with those of his colleagues and contemporaries, he gives his reason for dissent temperately and respectfully.

We find, too, a fair recognition and estimate of the writings and labours of others. But few American authors are mentioned, it is true, but British writers are frequently quoted. In regard to those of Germany we find some notable instances, marked by tone and statement, illustrating the fact that the results of the late war carried the iron into every fibre of the body politic of a sensitive and gallant nation.

Although clinical in character, the work rightly opens with several chapters upon the anatomy of the female pelvic organs and the modes and instruments of diagnosis. His estimate of the importance of diagnosis is very high, and calls to mind the motto[1] which Courty places on the title-page of his most excellent work.

"That which is difficult, that which is important, that which requires all the experience and all the skill of the best trained physician, which calls into play all the medical qualities with which he is endowed, is less the establishment of the treatment than the diagnosis of the disease against which this treatment is to be directed."

Of the means of diagnosis he esteems the touch above all others, as the means *par excellence*, and does not hesitate to say, with Aran, that if compelled to choose but one for exclusive and sole use, this would be the one. To the student, the advice to accustom himself to the use of either hand indifferently is worthy of most careful attention; to be ambidextrous is of no less importance to the practitioner in this department than to the surgeon, and comes far more frequently in demand. While upon this subject we must not let the following *morceau* escape us:—

"M. Sims advises the physician to wash his hands before practising the touch, but in France we believe that this measure is more useful afterwards."

The opening subject of the book is Inflammatory Affections of the Uterus, and to this, indeed, a very large proportion—over three hundred pages—is devoted. The first chapter is upon Simple Parenchymatous Metritis, a disease which, from its infrequency, need not detain us. The

[1] "La precision du diagnostic et l'opportunité du traitement sont les seuls garants du succès dans la pratique."

next two chapters, the sixth and seventh, are upon Internal or Acute Mucous Metritis, designated also "*Metrite Hemorrhagique.*" Here the inflammatory process is limited to the lining membrane of the uterus, a limitation which holds good only for the acute forms; for, we are told, when there has been a certain duration of the diseased process, it is impossible for either mucous membrane or parenchyma to be alone affected, and elsewhere he says that a dividing line between the acute and chronic forms can never be plainly distinguished. The author also makes a marked distinction between inflammation of the mucous membrane of the body and of the neck; the internal os marks a boundary in pathology as well as in anatomy; and although the inflammation may affect both simultaneously, yet it is often restricted to one, and when restricted to the cervical membrane its consideration belongs rather to the subject of chronic metritis because of the almost universal affection of the subjacent parenchyma in this part of the organ.

"The inflammation of the mucous membrane of the body is that which presents itself most frequently in the acute form, and independently of all parenchymatous phlegmasia, while the inflammation of the mucous membrane of the neck, more intimately connected with the subjacent tissue, is acute only when there is, at the same time, acute parenchymatous metritis, and assumes more generally the chronic form. Further, when the mucous membrane of the body, and that of the cervix, are both together inflamed, the gravest symptoms, and those most important to recognize as well as to combat, are presented by the affection of the membrane of the body, and this to the extent that the inflammation of the cervical membrane constitutes only an epiphenomenon, an almost insignificant complication of a grave and serious malady."

This form of disease, acute corporeal endometritis, the author claims, is easy of verification, although its existence, outside of the puerperal state, has been denied by several writers of note, and he traces at length the pathological changes which the interior of the uterus undergoes. There is first redness, more or less general, and of deeper or lighter hue, velvety thickening, then softened in structure, it becomes less adherent to the parenchyma, and is easily removed, forming ulcerations. In other cases the granular follicles are more markedly affected, their orifices enlarged, and secretion increased or changed to pus. Following on these changes and passing into the chronic form of metritis come granulations and a cavity of the organ dilated, filled with blood, pus, leucorrhœal discharge, or all combined. It is this changed condition of the interior of the uterus which makes menorrhagia a prominent symptom, and much, the author insists, which has been written upon this symptom, should have been directed to the pathological conditions here described, and he emphatically denies the existence of such a thing as *essential* menorrhagia: —

"Every time that I find before me a persistent menorrhagia, even when no other symptoms are present, but especially if I can group around it some of those to which I have just called your attention, if I find neither an alteration of the blood, which explains this menorrhagia, nor a tumour, either intra-uterine or peri-uterine, nor a cancer of the uterus, I diagnosticate an internal metritis. This is saying to you that I completely exclude the idea of essential or idiopathic menorrhagia, and I do not hesitate to do so; for, the more I study, the more my experience enlarges, the less frequently I meet with these hemorrhages which it is not possible to trace, as a symptom, to some of the conditions which I have just enumerated."

Following this he enters upon an examination of some of the reported cases in which no lesion of the uterus or change in its mucous membrane

was found to account for the menorrhagia. He also enters upon a refutation of Courty's doctrine, that the lesions found are the result of the irritation produced by the functional derangements, and not the causes of them.

Alternating with the sanguineous flow is the leucorrhœal discharge, presenting special characteristics when proceeding from the body—purulent—far less viscid and tenacious than that from the cervix—and so generally streaked with blood that he endorses Bennett in saying that "the sanguino-purulent flow is to internal metritis what the rusty sputa is to pneumonia."

The consideration of "chronic metritis"—a disease acknowledged to be essentially rebellious and persistent—opens at once a question in regard to which there is no little discord among gynæcologists. Why is it metritis rather than hypertrophy, or induration, or engorgement, or "areolar hyperplasia," as recently proposed by Dr. Thomas. It is a question which the author thinks should receive an explicit answer, and not be dodged by "a vain quarrel of words." He precedes his answer with some considerations of general pathology from which it is deduced. As there are pathological steps preceding inflammation, and still a part of it, as congestive fluxion, which are not abolished or destroyed by use of the term inflammation, so there are conditions following and also forming part of it, as induration and engorgement, and these terms, for the final manifestations of the process, are not to be abolished or destroyed.

"I am, then, in perfect agreement with those authors who claim for each of these pathological states a place in a nosological arrangement, but with this restriction, that they appear there, not as distinct morbid entities, but as simple modifications, as different degrees of the same morbid process—inflammation."

He eliminates hypertrophy—an equal increase of all the tissues—without difficulty, from among the effects of inflammation. Induration, he claims to be generally conceded to be a direct consequence of the process, but it is with regard to engorgement, a favourite term with several writers, that he feels there will be the greatest difficulty, since there has been claimed for it an anatomical condition and a symptomatology peculiar to itself alone. Those who maintain this view have entrenched themselves behind Robin, and he attacks them with quotations from the same source, showing that engorgement is an increase in size of an organ caused by a serous exudation among its anatomical elements, that this is a step in the process of inflammation, and that if it arises in any other way, as it may, it is the result of an alteration of the blood, disease of the heart, or some obstruction to the returning circulation, and, in such cases, consequently, not a disease of the uterus but a condition common to it and to all organs within range of the cause.

The changes which the parenchyma of the uterus undergoes are widely different in the early and later stages of the disease. Always, or as a general rule, enlarged, in the first stage the organ is flaccid and softened, its vessels, especially the veins, dilated; in the later stage a ligneous hardness has succeeded to the flaccid and soft condition, and the organ, when cut, creaks under the scalpel. In the one stage the colour is a deep red, in the other a pale yellow; the one condition is a hyperæmia, the other an anæmia. In the later stage, too, there is a marked increase of the fibroplastic elements—a luxuriant proliferation of the cellular tissue. Coincident with this increase of the cellular element the muscular disappears, whether as a consequence or not seems undetermined. The condition in which the organ now is may be termed sclerosis; the condition, and the processes by which it has arrived at the condition, being similar to what occurs

in the liver producing cirrhosis, in the kidney causing the atrophy which is the last stage of Bright's disease, and in the nervous centres bringing forth sclerosis.

The connection between these two stages, the consideration of which by authors as distinct diseases is held to have been the cause of much confusion, is shown by the symptomatology, but especially by pathological anatomy:—

"Know, then, that anatomical research has found the uterus often in a sort of intermediate state, in which it presented together the alterations which characterize each of the two degrees of chronic inflammation, so as to show that, in spite of their apparent opposition, they are only different degrees of the same morbid process."

The objection may be made to this, that the condition in the latter stage is so widely different from that of the former that the term inflammation, if applicable to the first, certainly cannot be to the latter. The force of the objection is admitted, and the reply made that "it is not any more an inflammation properly speaking, but it is the result of an inflammation, and cannot be separated from this process any more than the abscess can be separated from the phlegmasia which gave rise to it."

That this will prove satisfactory seems to be very doubtful. The state not being inflammation "properly speaking," and not requiring the treatment of inflammation, as the author recognizes, is it not, after all, a question of terms—a "vain quarrel of words?" Fortunately, embarrassment to the practitioner in intercourse with his brethren, and confusion to the student are the only bad results from this want of agreement as to names. The pathological condition being recognized, and the appropriate treatment instituted, the interest of the patient does not suffer whether the disease be called chronic metritis, engorgement, or areolar hyperplasia.

The relation of inflammation of the uterus to versions and flexions is a subject upon which a well-known wide difference of opinion exists. We find the author holding a position between the extremes and in accord with some of our latest and best writers.

Anteversion is of all the deviations that which is most frequently an effect of metritis, for, the uterus being normally inclined forwards, the inflammation, by making it heavier, tends to incline it in that direction.

"It suffices, then, to cure the metritis, and the uterus will right itself spontaneously. I could show you many cases in my practice in which this has occurred. It is not the same for retroversion and the flexions, for these deviations appear to be rather causes than effects of the chronic metritis. The pathogeny is not always easy to comprehend in these cases. . . . It is impossible to lay down an absolute and invariable rule, and I am obliged to admit that if, under certain circumstances, and as a general rule, the metritis is the most important, there are other cases in which the deviation plays the principal part."

In the treatment of inflammatory affections of the uterus he does not differ widely from the course directed by the text-books in general use, showing the skilful and able practitioner by having no especial favourites in therapeutics, and by counselling a judicious adaptation of remedies to the case in hand. Briefly, it may be said to be but in slight degree, if at all, antiphlogistic, but little alterative as far as the general system is concerned, and very largely tonic and reconstituent. For the menorrhagia resulting from an inflamed mucous membrane, he has no faith in ergot or astringents, but, on the other hand, esteems digitalis highly, but not in the large doses which have been recommended, and which received the

sanction of Trousseau. He is strongly in favour of intra-uterine injections in this affection, using pure tincture of iodine and solutions of nitrate of silver and perchloride of iron. He has never seen any bad effects from them, but urges as precautions that such a condition of the parts be present as will insure the return flow, and that the liquid be thrown in without force. He is opposed to the use of Recamier's curette for scraping the interior of the uterus, believing that it may do harm, that it does good only by stimulation, and this end can be attained by less severe measures.

In the constitutional treatment of chronic metritis he places a high estimate upon cold water and the hydropathic method in general. He is favourable here to the use of ergot, and accords to arsenic, and especially in connection with iron, a value not always recognized, but certainly real. For local treatment he heads the list with depletion by leeches, and says there are very few cases in which he does not use it, although it sometimes fails to do good, and may do harm if not carefully guarded and restricted. The actual cautery is a remedy "used by all physicians who treat diseases of females," and which he thinks better than Vienna paste or all other caustics, and that by it effects can be produced not attained by any other remedy. It should be differently used according to the two different conditions of the uterus already pointed out. If the uterus be voluminous, red, and soft, the cauterization should be profound, making an eschar which will require considerable time to throw off; if it is hard and anæmic, in the second period of the disease, then the applications should be light and frequently repeated, in order to act as a stimulant. He is engaged in studying the effects of electricity in this disease, and hopes much from the constant current as a powerful modifier of nutrition, but as yet he has nothing of value to offer in regard to this remedy.

It is not necessary to mention in detail the various local applications to the uterus, or its ulcerated cervix, or the special treatment of certain symptoms which, in some cases, become especially prominent. Indeed, the space already given to inflammatory affections precludes our more than mentioning the other subjects treated of in the book. They are—hypertrophic elongation of the cervix, fibrous tumours and cancer of the uterus, peri-uterine hæmatocele, and ovaritis. The treatment of all these subjects is, like that portion we have gone over, such as to make us await with interest the other volume from the author, which, it is intimated, is soon to follow. J. C. R.

ART. XXIII.—*Body and Mind: An Inquiry into their Connection and Mutual Influence, specially in reference to Mental Disorders.* An enlarged and revised edition. To which are added Psychological Essays. By HENRY MAUDSLEY, M.D., F.R.C.P.; Prof. of Medical Jurisprudence in the University College, London, etc. Crown 8vo. pp. 342. London: Macmillan & Co., 1873.

IN addition to the matter contained in the original work, the volume before us embraces one address and two essays. These are "Conscience and Organization," delivered at the opening session of the psychological section of the British Medical Association, in 1872; and papers entitled

"Hamlet" and "Swedenborg," written for the *Westminster Review* and *Journal of Mental Science*.

Of the four lectures in which are expressed the author's views on the connection and relation of body and mind, the first is upon the physical conditions of mental function in health. Two prevailing errors have seriously impeded the study of mental phenomena: the consideration of the mind as a mysterious entity separate from and independent of the body; and the non-use of the inductive method. Instead of examining the simplest and most primary manifestations of intelligence first, and thence proceeding to the higher and more complex, men have begun by peering into the depths of their own consciousness, and seeking amid the complex results of education and experience the elemental processes by which thought and feeling first have being. When, avoiding this mistake, we attentively observe the simpler manifestations of intelligence, as in the child, the savage, or the lower animals, we soon notice that much of the activity which we have ordinarily considered intelligent, or resulting from thought, is in reality partly or wholly automatic. After once recognizing this fact it is surprising to remark how large a proportion of our own actions are of this character. Operations originally due to direct mental agency become with repetition wholly independent of conscious effort. Some experiments on the lower animals seem strongly to indicate either that what we call intelligence and consciousness are much less necessary conditions of animal life than we had supposed, or else that they may reside in nervous centres other than the hemispheres. A decapitated frog seeks to remove by a motion of the foot some irritating substance from his body; failing at first because the foot has been amputated, he brings to bear a more distant but uninjured foot, and succeeds. Had the animal intelligence; and if so, where did it reside? Illustrations are given not only of the wide domain of actions purely reflex, but of the frequency with which automatic activity is made use of in carrying out the special purposes of the mind. We walk, simply by willing to do so, without the slightest conscious apportionment of energy to the many different muscles involved. Even the higher nerve-centres themselves are capable, under exceptional circumstances, of activity wholly unconscious and automatic. The somnambulist, the epileptic, and the subject of mesmeric trance may see and hear and act, and yet be apparently utterly destitute of consciousness. Only the higher manifestations of what we call mind require activity in the nerve-substance of the cerebral hemispheres. When intelligence, emotion, will, are manifested, these are just as certainly results of cell-action in the gray cortical substance, as the movements following impressions on the spinal or sensory nerves are due to cell-action in their respective centres. Whether thought and feeling *can* occur, whether we *can* love and hate, and hope and fear, reflect, will, and remember, without molecular change, is not the question. We merely know that we meet with these phenomena only in direct connection with such material agency. If to recognize this fact be materialism, Dr. Maudsley must bear the opprobrium as best he may. How or why movement among certain atoms causes thought, and among others, motion, we no more know than we know why certain buds develop into oaks, and certain minerals form definite crystals, instead of assuming different shapes. The author directs attention to the close analogies which obtain between the action of the higher and of the lower systems. Thus the faculty of the mind which we call memory has its analogues in the multiform instances of habit and edu-

cation affecting the functions of the lower nerve-centres. Individual acts which, at first, require the attention and continuous effort of the mind, seem after repetition to become wholly automatic; so that either the action is transferred to a lower system, or else the higher one is capable of the same automatic action as the lower The function which we call "will" or "willing" Dr. Maudsley says is the reaction or response of the cerebral cells to ideas, just as is the motor impulse from the spinal cord to the impressions brought it by the sensory nerves. The activity of both systems is capable of being greatly increased by practice and by education. Exhaustion and tissue-waste, necessitating food and rest, follow activity of either system. Thinking, feeling, and muscular action, alike cause waste and call for repair.

Thus we are compelled to look upon mental and moral manifestations as functions of certain portions of our bodies.

The same lesson, *i. e.*, the close connection and dependence of body and mind, is taught by the intimate sympathies between different bodily functions and between these and the mental. Disease in some organs is notoriously associated with emotions of sadness and depression; while in others it is accompanied with hope and cheerfulness. Gestures, or words spoken or written, will excite the thoughts and feelings which they are adapted to express. Conversely, our thoughts and feelings often influence very powerfully the bodily functions. The curative powers of faith and hope, so largely used by charlatans, are too little employed by regular physicians.

Dr. Maudsley deprecates the course of a class of men who raise the cry of materialism against any investigation into the processes of thought and feeling. Truth should be sought at all hazards. If the truth conflict with dogma, so much the worse for the dogma. All truth must be self-consistent. No real lover of truth will reject a new fact because it contradicts an old belief. Preconceived notions regarding mental and moral faculties have no title to nullify the results of close scrutiny of the mechanism by which we feel and think and act.

The second lecture—on certain forms of degeneracy of mind, their causation, and their relation to other disorders of the nervous system—contains a clear and forcible presentation of the relation between physical structure and the various forms of intellectual and moral insanity, imbecility, degeneracy, and peculiarity. The broad fact of cerebral growth and development in the individual having a fixed relation to the civilization of races and ages, and the narrower fact that the character and conduct of a man are determined by his physical (including cerebral) organization, are plainly stated and well illustrated. The existence and multiform manifestation of hereditary influence; the insane temperament; the mental and moral effects of epilepsy; the indisputable facts that imbecility and disease may pertain to the moral just as to the intellectual nature: these and similar points, familiar to the alienist physician, but often little realized even by men of culture outside of the specialty, are exhibited as evidence of the interdependence of physical, moral, and mental traits.

We are glad to notice the vigour with which, in this lecture, Dr. Maudsley pays his respects to the middle-age dogma of the British courts which makes knowledge of right and wrong the test of responsibility.

The lovers of Darwinian speculations will be interested in the instances, new and old, here given of the curious resemblances in appearance, gestures, and habits, borne by some insane and idiots to certain of the lower animals. That such singular likenesses do really exist is unquestionable;

but only the most sanguine mind could find in them any weighty confirmation of the Darwinian theory.

Dr. Maudsley directs attention to a belief which he thinks is not as fully accepted and realized as it should be. This is that the perception of right and wrong, or the moral sense, is just as much a result of education and development as are the intellectual faculties. Morally, just as much as mentally, a man is what his age, his race, and his parents have made him. This conclusion follows necessarily from the fact that mental and moral faculties are alike functions of the brain. In point of fact the lowest savages are nearly or quite destitute of a moral sense. History shows, too, that conceptions of right and virtue have developed step by step with advancing intellectual culture. Local and temporary exceptions have indeed been frequent; but on the whole, moral and intellectual progress have been parallel.

For his vigourous and manly utterances concerning what he calls "the tyranny of organization," Dr. Maudsley must expect much contumely. There is a large class of persons whose inherited religious belief forbids them to admit the possibility of any extenuating circumstances in connection with wrong-doing. We cannot, however, believe that religious ideas alone will forever resist the progressive spirit of the age. Symptoms of yielding are already obvious. Every honest investigator who, like our author, dares to write what he believes to be the truth, regardless of consequences, contributes to the ultimate triumph of the right.

The third lecture, on the relations of morbid bodily states to disordered mental functions, deals especially with insanity. Great importance is attached to the idea that in all cases of insanity there exists, as necessary condition and antecedent, some structural peculiarity of the cerebral matter. Too little attention has been paid to the constitutional and predisposing causes, and too much to the circumstances attending the outbreak of overt disease. It is to be regretted that some of our hospital reports encourage the popular misconception by printing tables of the so-called "causes" of insanity in which are mingled accidental antecedents, early symptoms of derangement, and real, though secondary causes.

Not only is the primary or predisposing cause of madness physical, but also the exciting cause in many cases. Dr. Maudsley is disposed to apply this idea to the classification of the various forms of mental disease, by naming these not in accordance with their phenomena, but according as they proceed from disorder of one or another group of organs. He admits, however, that very different manifestations may occur in different persons from the same exciting cause; and that moreover the constitutional tendency alone is often sufficient to produce insanity. The lecture exhibits the closeness of nervous connection between different portions of the body and between these and the mind. There is scarcely any physical disturbance which may not affect other systems than that in which it occurs. Even what we call moral causes may be supposed to act physically, since emotion, like thought and labour, involves molecular change and calls for rest and repair.

We wish space permitted us to quote some eloquent passages in which Dr. Maudsley enforces his views of the practical unity of mind and body. We can only direct the reader's attention to the closing pages of the lecture as especially worthy of careful perusal.

The lecture on conscience and organization is a fuller exposition, and a practical application, of ideas already suggested or implied, concerning

responsibility as affected by organization. The common existence of moral perversion as a part of insanity; the frequent change of moral character after injuries to the head; the interchangeable or alternate transmission by inheritance of insanity and vice, intellectual and moral disorder—these and similar facts point irresistibly to the conclusion that emotional phenomena, just as surely as intellectual, are functions of cerebral cells. While the dependence of mental manifestations upon the brain is now pretty thoroughly admitted, yet the other fact supported by precisely the same evidence is even now disputed, and sometimes by medical men who ought to know better. The idea of demoniacal possession is not so fully abandoned as we might suppose; for while intellectual derangement is attributed to disease, yet for moral or emotional obliquity the devil often receives credit, rather than disease or inherited cerebral defect. Such is the force of early teaching and of traditional belief that many educated people reject without examination any teaching which seems to contradict these. The religious belief most generally professed ignores or denies any connection between morality and physical organization. It holds the individual to a strict accountability for character which may really be but the inevitable consequence of weakness, disease, or error, in preceding generations. The hardness and cruelty of this view, with the practical mistakes to which it gives rise, are vigourously set forth. The author believes that the moral character and conduct of a man, like his intellectual abilities, are often but the necessary and logical results of antecedents for which he cannot possibly be held responsible.

The essay on the theory of vitality is principally speculative. A prominent thought seems to be, that processes known as organic or vital are not so different as is commonly believed from those which are called inorganic. If we understand him, the author holds the opinion that life is the result or fruit of inorganic combinations, and is one form or manifestation among many in which is exercised the force or power which is ever-existent and indestructible in the universe. Admitting that we have never yet witnessed the origination of life from inorganic beginnings, he yet deems such origination possible, because in accord with known facts. We confess that we are not quite able to follow Dr. Maudsley in his speculations on this subject.

The essay on the limits of philosophical inquiry is in answer to an address on the same subject delivered before the Edinburgh Philosophical Institution, in 1868, by the Archbishop of York. The views maintained by Dr. Maudsley can be readily inferred from what we have written. The paper is a vigourous defence of free thought. In it are clearly exhibited the absurdity and presumption of the notion that our inherited ideas, beliefs, and traditions on certain subjects are to be regarded as immutably fixed, above and beyond doubt or examination, so that no new fact or hypothesis which may conflict with these sacred formulas is to be for a moment entertained. Dr. Maudsley very justly intimates that the alleged presumption of scientific inquirers, is modesty itself, compared to the conduct of men who dare to dogmatize concerning the Unknowable, and to hand down their crude and unworthy conceptions to succeeding generations with injunctions to believe unquestioningly on pain of eternal torment. Indeed, the worthy churchman himself, in the skilful hands of Dr. Maudsley, is made to appear much less modest than those whom he sweepingly condemns.

The paper on Swedenborg, we imagine, will take many of his readers

by surprise. Even those who have had least faith in this person's extraordinary revelations, have regarded him as a man of wonderful ability and learning, pure and simple-minded though visionary, fond of writing out his dreams at length, and fancying they were actual occurrences. Dr. Maudsley uses as the text of his paper a biography of Swedenborg, recently written by Wm. White, containing much information concerning his life, character, studies, and mental condition, which, though perhaps not strictly new, has been but little known to the world at large. It needed no prophet to tell us that the value of Swedenborg's scientific labours has been greatly over-estimated, especially by those who accept his religious doctrines. While they show some acquaintance with the science of his time, they reveal very little that is new or original. We are quite ready to accept our author's estimate of his scientific merits when he says :—

"Swedenborg speculated largely and vaguely about magnetism, chemistry, astronomy, anatomy, as he did about everything else, and expressed what he thought with an unequalled self-sufficiency; but if his speculations on these sciences be compared with such exact knowledge of them as existed at the time, his information will be found to be superficial and defective; his speculations for the most part crude, barren, and fanciful." (p. 220.)

It appears that when about fifty-six years old he had an attack of veritable mania, when he was full of delusions, and so crazy as to require the care of one or two attendants. It continued for a few months only, but he never afterwards resumed his philosophical studies, devoting himself thenceforth exclusively to religious speculations, and to the exposition of his peculiar views of the spiritual world. The maniacal attack was preceded, it seems, for a few weeks, by horrible dreams and visions, such as not unfrequently mark the incipient stage of mania. After his apparent recovery, or, at any rate, after the high excitement had passed away, these dreams and visions continued till he died; but the scenes they displayed were always regarded by him and his followers as having an objective reality.

The true character of Swedenborg's mental experiences is obvious enough to the clinical psychologist of our own time, even without the *raison d'être* furnished by his biographer. For his father, among other peculiarities, had a wonderful faith in his own spiritual gifts, which enabled him to cure disease in a miraculous manner, of which several instances are given.

When nearly eighty years old he wrote his autobiography, making six copies of it, with his own hand, and dedicating them "to my children and posterity as an example how to conduct themselves after my death." That strong mental peculiarity in the father should be followed by overt insanity in the son would not surprise any one much conversant with the insane. Nor is it opposed to our actual experience that a paroxysm of acute mania should be directly followed by a mental condition in which, for many years, the thoughts and conceptions conjured up by the morbid activity of a brain incapable of regaining its normal integrity seemed to have an objective existence. Of course it can hardly be expected that the followers of Swedenborg will accept an explanation of his case which would oblige them to abandon the very foundations of their religious faith; yet what careful student of mental pathology will think it less probable than the idea that to this favoured mortal were laid open the wondrous secrets of the invisible world?

Dr. Maudsley cannot forego the opportunity of indulging in a fling at hospitals for the insane, better fitted for a sensational newspaper than for the pages of a writer justly eminent for his professional attainments. He may sincerely believe, as he says, that a very large proportion of those who resort to these institutions would do better at home, or somewhere else; but let him not endeavour to enforce his views by distorted or unfair statements of fact. He declares that Swedenborg, and George Fox, and Benvenuto Cellini, had they lived in our day, would have been shut up in asylums; and says that "no one has yet sufficiently considered how much originality and individuality are systematically suppressed in lunatic asylums, and how hard it would have gone with some of the most distinguished reformers of past generations if their lots had been cast in these days when there are scattered over the land so many overgrown and overcrowded asylums." When a man of Dr. Maudsley's abilities and position indulges in such paltry clap-trap, he may, no doubt, secure the favour of those brainless reformers who are unconditionally opposed to all hospitals for the insane; but it is most assuredly at the expense of his own reputation for good sense and sagacity. Were we to hold him to a strict account for his words, we should ask him if during the many years of his acquaintance with these hospitals he has ever found a single person in whom any single spark of originality or individuality had been suppressed by them, systematically or otherwise. If he points us to the case of Comte, who, he is sure, would never have given to the world his system of Positive Philosophy had he not been removed by his wife from Esquirol's Asylum, when there seemed to be no prospect of his recovery, we would reply by asking him a question or two. Does it prove that asylums should be abolished because some persons who come under their sheltering care during the period of a recent maniacal excitement, are subsequently taken home by anxious friends before they are entirely recovered? If he says no to this, as he and every other proprietor of a private asylum must, then he virtually admits that Comte's case furnishes no argument against these institutions. We might also ask, with no danger of an adverse reply, whether a longer stay might not have resulted in recovery. Moreover, we might query, with many a profound and liberal thinker, whether, if he had never afterwards put pen to paper, and his *Philosophie Positive* had remained forever shapeless and disembodied in the recesses of his own consciousness, the world's progress would thereby have been much retarded? We join issue with the author as to the matter of fact implied in the above statement—viz., that it is common at the present day to shut up in asylums such men as Swedenborg and George Fox. We do not believe that an instance can be found in this country—and the same is no doubt true of Great Britain—of a person thus confined whose insanity consists solely of some harmless extravagances of opinion, or even of downright delusions on moral, social, or scientific subjects, while remaining inoffensive to others, and able to take care of himself. Of course we except from the scope of this statement cases in the early stage of the disease, when the asylum is supposed to furnish, better than any other instrumentality, the means of comfort and restoration. In chronic cases the office of the asylum is strictly custodial, and for those only whose habits or propensities render them dangerous to themselves or others, or who are without friends able and ready to render the care and attention required.

Among the books whose titles are prefixed to the essay on Hamlet,

is that of Dr. Conolly, called *A Study of Hamlet*. Yet to this work, in which the revelations of mental pathology, obtained by wide clinical observation, under the guidance of uncommon practical sagacity, have shed a flood of light on a character which many a distinguished intellect had failed to explain, not the slightest allusion is made from beginning to end of the essay. Surely, he cannot be insensible to the merits of Dr. Conolly's work. He cannot deny the great ability with which the theory of the Prince's character is worked out, even though he may fail to see in it results more satisfactory than all the speculations of the German critics from Goethe down to Dr. Gervinus. No one could better appreciate Dr. Conolly's profound insight into the movements of the disordered mind, his nice discrimination between the suggestions of reason and those of unreason, or the exquisite skill with which he follows the successive steps in the development of the disease; and, therefore, we had expected to receive from his examination of this work a measure of gratification scarcely less than that afforded by the work itself. We are aware that what purports ostensibly to be a review of a book, does not necessarily imply anything more than a text with the reviewer's own ideas thereupon. Perhaps the author means that we shall consider his essay as a comment, by implication, on that of Dr. Conolly. If so, we doubt if many practically conversant with mental disorders will find the comment quite satisfactory. In Dr. Maudsley's conception of Hamlet we recognize some of the views most prevalent among critics, with but little of that profound and accurate insight which his previous record had led us to expect. It needed no seer to tell us that Hamlet laboured under excessive irresolution and indecision. What we want to know is the precise psychological significance of those traits, the foundation or framework, so to speak, on which they rested. Were they the result simply of the normal constitution of the mind, or did they spring from the intrusive and disturbing forces of disease? On this question we look for light to the few observers, who, by means of a nice discernment of the modes of mental action displayed around them, and by unusual opportunities for studying the disordered mind, are peculiarly qualified to distinguish between the play of healthy affinities and the discordant movements of disease.

Dr. Maudsley is contented with a simple expression of opinion that Hamlet's insanity is feigned, and scarcely attempts to add any strength to this view of the case as it already stood. Those who have had only an outside view, so to speak, of insanity, find no difficulty in accepting the traditional belief. To them it is satisfactory, simply because they know nothing to make them think otherwise. But we must own to some surprise when one, who for years has witnessed professionally the display of insanity on a large scale, fails to see in the mental movements of Hamlet that thorough sincerity, that intense earnestness, that unequal conflict between reason and unreason, which pervade so many records in the case-books of modern hospitals for the insane. What earthly, or unearthly, purpose he could possibly gain by feigning insanity, how it could help him to execute his designs on the king, no man or woman has ever undertaken to show. Though we believe him to have been really insane, we never thought him a fool, for certainly it were but a sorry compliment to his intellect to suppose that he resorts to a vulgar "dodge" which would inevitably thwart rather than further the accomplishment of his purpose. Why should he not have done as any other person naturally would in similar circumstances—carefully concealed his thoughts and lulled to rest

any possible suspicion by sharing with apparent heartiness in the wedding festivities, and cheerfully accepting the new situation, while patiently waiting and watching for the favourable opportunity? Why should he have assumed a part calculated to attract observation and excite apprehensions of danger? Nothing could be more likely to frustrate his plans than the conviction of those around him that he was mad. Indeed this was shown by the event, for the king, to insure his own safety, sent him to England, thus apparently postponing, if not preventing the consummation of his schemes. Moreover, they who contend that Hamlet's madness was simulated, do not seem to observe that it was a form of the disease which the simulator never chooses. It is not demonstrative enough for his purposes; for though Hamlet may have led his friends and acquaintances to suspect that his mind was beginning to wander, yet by the world at large it would have been regarded as a very weak attempt at deception. Had he been tried for the murder of Polonius, and defended on the ground of insanity, he would scarcely have escaped on that plea.

There is a considerable repetition in the work, the same ideas finding expression in the different papers. This, however, is not to be wondered at when we remember that the book is not a unit, but a collection of articles written at different times. B. L. R.

ART. XXIV.—*Recent Works on Diseases of the Ear.*

1. *A Practical Treatise on Diseases of the Ear, including the Anatomy of the Organ.* By D. B. ST. JOHN ROOSA, M.D., Professor of Diseases of the Eye and Ear in the University of the City of New York, Surgeon to the Manhattan Eye and Ear Hospital, etc. 8vo. pp. 535. New York: Wm. Wood & Co., 1873.
2. *Lectures on Diseases and Injuries of the Ear, delivered at St. George's Hospital.* By W. B. DALBY, F.R.C.S., M. B. Cantab., Aural Surgeon to the Hospital. 8vo. pp. 228. Philadelphia: Lindsay & Blakiston, 1873.

DR. ROOSA'S translation of Von Troltsch's work on Diseases of the Ear has been, for nine or ten years, the favourite text book on the subject in this country, and has, perhaps, done more than any other publication towards awakening in the profession a general interest in this hitherto sadly neglected class of diseases. Now that the third edition has been exhausted, and the work is out of print, the translator will be heartily welcomed as the author of a book of his own. As rational and scientific aural surgery may be considered the youngest branch of medicine, there is need of a more rapid succession of text-books to keep pace with its development, and the reader will not find that the present volume has followed too closely upon the writings of Toynbee and Hinton.

One of the most interesting chapters is the first, which gives a brief sketch of the progress of otology from the time of Hippocrates to our own, a bird's-eye view, as it were, of the ground that has been passed over in all those years.

The usual division into external, middle, and internal ear is adopted, and a clear and sufficiently minute description of the anatomy of each is given before its diseases are discussed.

Chapter third is devoted to the methods of examining aural patients, and the merits of the otoscope, catheter, inflator, diagnostic tube, tuning fork, the different forms of specula, etc., and brief instructions for the practice of rhinoscopy. In registering the hearing power of patients, the author adopts the plan suggested by Dr. Prout, of Brooklyn, analogous to Snellen's method of estimating the accuracy of vision. He records the hearing power "as a fraction, the numerator of which is the distance at which the particular sound is heard, the denominator the distance at which it should be heard by an ear of good average hearing power. This denominator must vary according to the sonofactor used, and should generally be expressed in inches." Thus, if the hearing power should be stated to equal $\frac{12}{36}$, it "would represent the fact that a watch that should be heard at thirty-six inches was heard at a distance of twelve inches."

Among the diseases of the external ear, the interesting subject of othæmatoma, the bloody tumour of the auricle sometimes called "asylum ear," is discussed at some length, with the following conclusions:—

"*First.* There are two distinct varieties of othæmatoma; traumatic and idiopathic.

"*Second.* That the idiopathic is much more common among the insane than among others, but that identically, or nearly, the same affection does occur among the sane. It is probable, however, from Brown-Séquard's experiments, that the affection is caused by some lesion at the base of the brain, so that although persons suffering from vascular tumour of the ear may not always be insane, they generally have brain disease.

"*Third.* The traumatic form differs from the idiopathic in being a simple extravasation of blood from vessels ruptured by violence. In such cases, the deformity resulting from the spontaneous effusions does not occur, unless among professional pugilists, where the violence is frequently repeated, and the auricle, from repeated hemorrhages, assumes a shape like that resulting from a true othæmatoma."

In treating of diffuse inflammation of the external meatus a caution is given against the prolonged use of poultices, the author having met with several cases in which they seemed to have been the cause of the rapid development of polypi. The chapter on otitis parasitica is illustrated by reports of cases and plates of the microscopical appearances of different forms of fungi found in the external meatus.

There is a very sensible chapter on the apparently simple but important and vexed subject of the removal of foreign bodies from the meatus. Though no doubt more mischief has resulted, in the aggregate, from reckless attempts at extraction than would have been caused by the offending body itself, the author's laudable earnestness in condemning the *nimia diligentia*, that has done so much harm in these cases, has, perhaps, led him a little too far when he says that "the presence of a foreign body in the canal is, after all, not a very serious matter." We remember a case in which death resulted in the most direct and unmistakable manner from the presence in the meatus of a foreign body (the end of a small knife blade), of which the patient was not conscious and which, therefore, no attempts had been made to remove. The instrument that many consider the simplest, safest, and best to use in cases where the syringe fails, a wire loop, is not mentioned. We have found the delicate loop of ductile steel, in the form of the blade of an obstetric forceps, which is sometimes used as a traction instrument in cataract operations, to answer the purpose admirably in the case of a rounded body, as a cherry stone.

The author "discards the term 'myringitis,' or inflammation of the

drum membrane, except as the name of one of the symptoms of otitis externa or otitis media, or to describe the inflammation produced by injury," for the very good reason "that the anatomical structure of a membrane that has but one layer of tissue peculiar to itself, and that in its centre, but which is a direct uninterrupted continuation of the adjacent parts, precludes the idea of an inflammation that occurs primarily in this part." As isolated myringitis is generally acknowledged, by recent authorities, to be very rare, and as no special treatment is recommended for it, no practical objection can be made to this exclusion.

The effects of compressed air upon the membrane and tympanum are shown by the observations of Gruber, Magnus, Dr. John Green, of St. Louis, and Dr. A. H. Smith, of New York, and form the subject of several interesting pages.

The diseases of the middle ear are classified as follows: 1, acute catarrhal inflammation; 2, subacute catarrhal inflammation; 3, chronic non-suppurative inflammation; 4, acute suppurative inflammation; 5, chronic suppurative inflammation, and the consequences of chronic suppuration, as polypi, caries, cerebral abscess, etc.

Under the head of otitis media hemorrhagica, several very interesting cases of hemorrhage from the tympanic vessels are given, some of them occurring independently of constitutional cachexia, and others as a complication of Bright's disease.

The chronic non-suppurative inflammations of the middle ear are divided into two classes—the catarrhal and the proliferous—the latter including that form of disease to which the misnomer of "dry catarrh" is sometimes applied, which Toynbee described as "rigidity of the mucous membrane of the tympanum," and which Troltsch calls "sclerosis," but does not separate distinctly from true catarrh. It is certainly much to be desired that some definite and scientific nomenclature should be adopted for the diseases of the tympanum, and this seems to be a step in the right direction.

Dr. R. unhesitatingly admits the interesting fact that some persons suffering with non-suppurative inflammation of the tympanum, hear better in noisy places than do persons with sound ears, but his explanation of the phenomenon appears to us eminently unsatisfactory. He thinks "it will be found to depend upon an intensification or condensation of the sound waves, by the rapid vibrations of the wheels of the carriages, and the other means by which the sound is increased and the place made noisy." This may serve to mystify readers who know and care very little about sound waves, but will give little comfort to the anxious seeker after scientific truth. It is very far from clear how such a cause could produce such an effect, or, if it could, why the effect should not be the same upon sound as upon unsound ears.

This phenomenon, which has been denied by some authorities, but is now pretty generally admitted, has never been satisfactorily explained. The most ingenious explanation is that of Mr. Peter Allen. He assumes that, in these cases, there is a relaxed condition of the membrane, and that the stimulus of the noise acting upon the auditory nerve causes a reflex contraction of the tensor tympani through the motor root of the fifth. We may rest satisfied with this when the fact of the relaxed condition of the membrane has been established.

The author gives statistics to show that the average duration of chronic aural catarrh when the patients apply for relief, is from five to twenty years, and justly complains that "the neglect of aural therapeutics by the

last and the preceding generation now recoils upon us." Of course, until the profession and the public become convinced of the necessity of commencing treatment in this disease as early as they would in any other, the results must continue to be discouraging.

A table, compiled from different authorities, showing the results of treatment of chronic non-suppurative inflammation of the middle ear, gives from eleven to thirty-two per cent. of cures, and from fifty to sixty-two per cent. of cases improved. If Dr. Roosa's classification of the catarrhal and proliferous forms had been adopted in the construction of the tables, the exhibit of the former would probably have been much more favourable. Even as it is, the result is not to be despised.

Dr. Roosa is very decided in his proscription of the Weber or Thudichum nasal douche in the treatment of naso-pharyngeal catarrh, and thinks that its use should be discountenanced by the profession. It must be admitted that the list of cases, that he furnishes, of injury to the ear resulting from its use is rather disturbing, but we confess ourselves among those of the profession who are "loth to abandon it" entirely, because we believe that the nostrils, upper pharynx, and frontal sinuses cannot be reached so thoroughly in any other way, and that, with proper precautions, the danger of injury is very slight; if it should be thought necessary to follow the advice of the London jury, in the famous Turnbull Eustachian catheter case, and "never intrust the instrument to unprofessional hands," this danger would be reduced to a minimum.

The evidence of Dr. Elsberg's sixteen hundred cases without an accident, cannot logically be ruled out on the ground "that when accident to the ear occurs, the patients are more apt to consult a person who is in the constant habit of treating aural disease, than to go on with the treatment of the nasal catarrh," for when mischief is caused by the use of an instrument or prescription, the doctor that ordered it is very apt to hear of the result. Dr. J. Solis Cohen, who has treated a large number of cases of disease of the pharynx, says that he has been in the habit of using the douche frequently, and has never met with the accident referred to. The only case of the kind that we have heard of occurring in Philadelphia, was reported in the *Philadelphia Medical Times*, August 1st, 1871. The patient, after having used the douche daily for several years, thought that the cure was progressing rather slowly, and might be expedited by "getting the wash higher up in the head." He accordingly stopped the flow from the free nostril, by pressure with his thumb, and the fluid was instantly forced into the tympanum. It should certainly be borne in mind that the douche is an instrument powerful for evil as well as for good, and one that should be used only with intelligence and care.

The employment of bougies for dilatation of the Eustachian tube is not looked upon with much favour, because they are painful, and not devoid of danger, and because "complete stricture of the tube is too rare an occurrence to be really much considered as an indication for the use of bougies." It is said that the vapour of chloroform will penetrate the tympanum, when the entrance of air cannot be recognized by the patient, and the author thinks Dr. Prout's suggestion to use it as an additional means of diagnosis is a valuable one. It is applied by means of a hollow bulb of glass or hard rubber, containing a small piece of sponge, and attached to the tube of Politzer's apparatus.

There is an interesting historical sketch of the operation of paracentesis of the membrana tympani; and the account of the treatment of chronic

non-suppurative inflammation of the tympanum is concluded by a description of Hinton's method of washing out inspissated mucus from the cavity of the tympanum, by perforating the membrane and passing an alkaline fluid through the tympanum and Eustachian tube, from the external meatus; of the operation of incision of the posterior fold of the depressed membrane; and of Weber's new operation of tenotomy of the tensor tympani.

We have not space to follow the author through the important subject of acute and chronic suppurative diseases of the tympanum, a subject that should not be left to the aural surgeon, but should be carefully studied by every one who undertakes the responsibility of general practice. How any conscientious man can know the anatomy of this most dangerous region and dare to assume the care of its destructive diseases without all the knowledge within his reach, is hard to understand. It is not merely a question of more or less hearing but, too often, one of life or death. These diseases are fully and well discussed.

Under the head of caries and necroses of the temporal bone, a list of cases by Wilde, Agnew, Gruber, and Voltolini is given, in which the whole of the internal ear was extracted through the external meatus during the life of the patient. To these should be added a case, reported by Dr. W. W. Keen, in the *Phila. Medical Times*, June 15th, 1871.

Part third treats of the internal ear, or labyrinth, which may be said to be the "last ditch" in which "nervous deafness" has taken its stand, and the author admits that "the gaps in our knowledge of this subject are yet to be filled by the patient comparison of symptoms with post-mortem appearances." The connection of disease of the labyrinth with cerebro-spinal meningitis is a point of great interest. Dr. R. is inclined to adopt the view of Votolini, that an affection of the labyrinth occurring in young children is sometimes mistaken for cerebro-spinal meningitis.

"If we find a child suddenly taken with severe vomiting, followed by stupor or delirium, who never has any paralysis, but slight opisthotonos, such as children have with acute otitis media, and if we see this child recover in a few days from every symptom except the one (*sic*) of absolute deafness and a staggering gait, I think it is more reasonable to think of an affection of the ear as the cause of these symptoms, than of a disease of the brain and spinal cord. Having seen many cases in which such a history was clearly given, I must believe in a primary acute inflammation of the labyrinth, and I trust the attention of physicians will be directed to the differential diagnosis between this affection and cerebro-spinal meningitis."

In regard to the use of electricity in the diagnosis of disease of the auditory nerve, "the question at issue cannot yet be considered settled, though the stronger arguments at present appear to favour the theory of muscular contraction." The sounds heard by patients when the galvanic current is passed through the ear, are attributed by Brenner and his followers, to a direct irritation of the auditory nerve; others consider them the result of reflex irritation, while "Wreden, of St. Petersburg, claims to have established the fact that the sounds heard in the ear during the passage of the electric current are due to the contraction of the small muscles of the middle ear, and not to the direct or reflex irritation of the auditory nerve." Of electricity as a therapeutic agent in nervous deafness, the author says he has never seen any improvement result from its use, and quotes Knapp's statement that he "has tried it in nearly all reported cases, but without a shade of improvement."

A short chapter on deaf-muteism and hearing trumpets concludes the volume.

There are eight very fine chromo-lithographs, representing the membrana tympani, in health and in various forms of disease, and the anatomical descriptions are fully illustrated by plates, chiefly from Henle and Rüdinger. If some rather large pictures of familiar instruments that may be seen on any instrument-maker's counter, and sundry portraits of distressed-looking individuals, that have no special claim upon either science or art, were omitted, the book would be some pages shorter, but not at all less valuable.

We have endeavoured, as well as our limited space would allow, to give a general idea of the contents of the volume, and hope we have succeeded in showing that it contains a good deal to interest the general as well as the special reader, and that those who have not followed up the subject in monographs and journals will find in it much that is new to them.

As the author has faithfully fulfilled the promise made in the preface to give a comprehensive digest of the most recent European researches, and present the views and experiences of other American practitioners as well as his own, the work may be said to contain all that is actually needed in "a guide to those who wish to treat diseases of the ear" according to the light of the present state of advancement of aural surgery.

The critical reader will find many inelegant, and not a few extremely awkward sentences, and there are a number of positive errors of syntax that should be corrected in the next edition. This, though it may mar the pleasure, need not affect the profit with which the book may be read. Take it altogether, we have no hesitation in saying that, as a practical guide in the treatment of diseases of the ear, Dr. Roosa's is the most satisfactory book in the English language. It is safe to predict that it will take its position at once as a standard authority on the subject of which it treats.

Mr. Dalby's little book, the author tell us, has been published in the hope that it will "in some measure serve as a text-book for diseases and injuries of the ear,"—or, more correctly, for those who wish to treat such diseases.

It comprises eleven lectures, given in a very conversational style, and consisting largely of a running commentary on cases. Considered merely as a course of lectures to a class of students, they are very good, but, as they add little or nothing to the existing stock of knowledge, and are not full enough or systematic enough to form anything approaching to a text-book, we are not quite sure that the necessity for their publication was a very urgent one. Nevertheless, as the cases are well reported, and some of them very interesting, and as a good summary of aural pathology and therapeutics is condensed into a very small space, the volume may have a useful mission among those who have not time or inclination to pursue the subject through more elaborate treatises.

For a work aspiring to the dignity of a text-book, great economy has been observed in the matter of illustration. Two anatomical wood-cuts of the external meatus, several drawings of the microscopical structure of polypi, and some rather unnecessary pictures of instruments, and of a patient undergoing Politzer inflation, complete the list.

The print is excellent and the text is pleasant reading, though by no means a fair specimen of the highest order of English medical literature. We notice several expressions that would do very well for "Americanisms;" "disimproved," for instance, we take it, has been coined by the author as a mild term for slightly injured. G. C. H.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXV.—*St. George's Hospital Reports.* Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. VI., 1871-2. 8vo. pp. x. 433. London: J. & A. Churchill, 1873.

AFTER an interval, so long as to lead us to fear that the "St. George's Hospital Reports" was to be added to the dreary list of extinct medical serials, a sixth volume has at length appeared, and, whether as regards its general appearance or the scientific value of its contents, impresses us as being no whit inferior to any of its predecessors. According to custom we purpose inviting our readers' attention to the various articles contained in the volume, and shall first consider those papers which are of special interest to surgeons.

Three *Lettsomian Lectures* are contributed by H. LEE, Esq., the first being *On Syphilitic Urethral Discharges*, the second *On Prostatic Discharges*, and the third *On Non-syphilitic Urethral Discharges.*

Mr. Lee begins by referring to Hunter's celebrated experiment of which, upon the authority of the late Mr. Babington, Mr. L. assures us that Hunter was himself the subject—that experiment on the strength of which surgeons for so many years maintained the identity of gonorrhœa and syphilis; and then, briefly reviewing the more recent experiments and observations of Ricord, Wallace, Waller, Vidal, Rinecker, Rollet, Cullerier, and Morgan, avows his belief that there may be either a primary or a secondary syphilitic discharge from the urethra, contagious and capable of communicating true syphilis to a healthy subject, and of causing ulceration when designedly or accidentally inoculated upon one who is already syphilitic. We pause here for a moment to remark that Mr. Lee is obviously quite unacquainted with the Lectures on Venereal Diseases published some ten years since by our fellow-countryman Dr. W. A. Hammond, formerly of Baltimore, but now of New York; those of our readers who are familiar with the work to which we refer will not fail to see that many of the views lately advanced as novelties on the other side of the Atlantic were in great measure anticipated by Dr. Hammond. With regard to this question of contagious syphilitic urethral or vaginal discharges, we are prepared to believe that, as a *secondary* lesion, such a discharge exists, and is the medium of conveying syphilis, more frequently than is commonly supposed; but that such a discharge occurs as a form of *primary* syphilis without the coexistence of a chancre, we are not ready to acknowledge: in other words, we still hold to the doctrine that the initial lesion of acquired syphilis is invariably a chancre. It is not necessary, in the case of a muco-purulent urethral discharge accompanying a concealed chancre, to suppose, as Mr. Lee (page 13) appears to think that those who hold with us must suppose, that all the matter which flows from the meatus has been secreted by such chancre; for we know that in certain constitutions and under various circumstances large quantities of muco-pus may flow from the urethral, as from other mucous membranes, as the result of very diverse and sometimes quite trivial sources of irritation, of

which the presence of a chancre in or even in proximity to the urethra may obviously be one. The simultaneous existence of a chancre and a discharge from the urethra, we therefore look upon as simply a coincidence; nor do we see any reason to believe that syphilis can be conveyed by urethral discharge alone, unless as already mentioned the occurrence of the discharge be itself a secondary symptom.

Mr. Lee's second and third lectures are interesting papers and may be read with advantage by all surgeons, but present few points which call for special comment; we will note only that urethral stricture is believed by the author to be not unfrequently of syphilitic origin, and then to require the use of mercury, and that the employment of caustics in cases of prostatic discharge (the "prostatorrhœa" of Prof. Gross) is discountenanced, and local applications of the solution of perchloride of iron, diluted in the proportion of from two to four fluidrachms to eight fluidounces of distilled water, regarded as equally efficient and as much more safe.

A Case of Osteomalacia is communicated by S. W. Moore, Esq., who acknowledges his indebtedness for notes of the patient's history to Mr. Richards, of the Hanwell Asylum. The patient whose case is here recorded was a woman nearly eighty years of age, who eleven years before her death had sustained a fracture of the leg; six years subsequent to this injury, fractures of both thighs; and again, during the last months of her life, a fracture of the left arm. For a long while she was bedridden, and her limbs presented in a marked degree the deformities which are known to characterize cases of mollities ossium. From Mr. Moore's account of the post-mortem appearances in this case we select the following description of the conditions observed by microscopic examination:—

"A portion of the bone was subjected to Beale's carmine fluid. Sections, under the microscope, presented . . . . a matrix, probably granular, with irregular masses of bone-tissue proper, surrounded by a portion of decalcified tissue with a bold margin; the osteoblasts were large and irregular; in some cases faint outlines of the original Haversian systems could be traced, in others nothing but the isolated osteoblasts themselves. Subjected to a higher power the following was observed: the matrix in which the irregular masses of unaltered bone-tissue were situated had undergone a remarkable change, but one familiar to pathologists, viz., that of conversion to connective tissue; fibrillation could be distinctly seen in every part of this decalcified portion, in most cases following the curves of the remaining masses, but in parts distant from the recent changes irregularly distributed. Interspersed about this region were numberless corpuscles or cells, in which a distinct nucleus could be seen; these cells were considerably smaller than the osteoblasts. On the matrix, disposed in irregular masses, as described before, with a sharp well-defined outline, was situated that portion of the tissue undergoing change, and having in its centre unaltered bone; the borders of these were clear and translucent, with large osteoblasts scattered here and there, still occupying the position they formerly held in the original bone; they were, however, larger, with a distinct nucleus and the absence of canaliculi; the only trace of these latter was a jagged or projecting corner at one or two points of the corpuscle. Next in order, and within most of the masses, was the unaltered bone, in which lacunæ, canaliculi, and Haversian canals might easily be seen, apparently normal. Several Haversian spaces were also observed; sections deeply stained with carmine were only coloured in the unaltered parts."

The microscopic appearances in this case are shown by means of a lithographic plate containing several figures.

The next paper to which we shall refer is *On the Calculous Disease in Bombay and some other parts of India*, by H. V. Carter, M.D.

Dr. Carter shows not only that vesical calculus is a common disease in India (which, indeed, was known before), but that the composition of the majority of

Indian calculi differs from that usually noticed in England—uric acid and phosphatic calculi being much rarer, and oxalate of lime calculi much commoner in the former than in the latter country. The difference is attributed by Dr. Carter to the almost total exclusion of animal food from the diet of the Indian natives, to the diminished waste among them of the albuminous and gelatinous tissues, and to the excretion by the sudoriparous glands in the inhabitants of a warm climate of much organic matter which would otherwise be eliminated in the urine in the form of urates.

We turn next to a fourth instalment of Mr. PRESCOTT HEWETT'S *Contributions to the Surgery of the Head*, the title of the present communication being *On Congenital Encephalocele and Hydrencephalocele*. This is a very valuable paper, and is marked by the same practical tone which has characterized the author's other writings. The term *hydrencephalocele* has been ordinarily applied to any instance of brain-protrusion complicated by the existence of fluid in the sac, but Mr. Hewett is disposed thus to designate those cases only, in which the fluid is within a protruded portion of a ventricle.

"Thus viewed, an encephalocele is simply a protrusion of brain-substance, it may be of any part; and a hydrencephalocele a protrusion of brain-substance, involving a portion of one of the ventricles, filled with fluid. In both cases, fluid, either in the sac itself or enclosed in cysts, may be superadded to the brain-protrusion; in truth, a brain-protrusion, plus a watery tumour, with all its varieties."

These cases are to be distinguished, on the one hand, from those of *meningocele* (in which the sac contains fluid only, and in which neither brain-substance nor ventricles are involved), and, on the other hand, from cases in which multilocular cysts, originating in the neighbourhood of the ventricles, communicate with those cavities and ultimately protrude through the skull. In these cases the protrusion contains no brain-substance, and they cannot, therefore, with any propriety be called hydrencephaloceles. In the latter the brain-substance may always be recognized, even if much attenuated, at the neck of the tumour, though perhaps undistinguishable at other parts.

"In well-marked cases the symptoms and progress of an encephalocele differ in some respects from those of a hydrencephalocele. An encephalocele is of a round or oval shape; in size it seldom exceeds that of a small orange; its attachment is broad; the integuments covering it present little or no alteration. In the earlier periods, being for the greater part a watery bag, it has all the characteristics of such a tumour; but later on, as the fluid gradually disappears, the brain-matter fills the sac, and then the tumour becomes soft and doughy, and movements connected with the circulation and the respiration may become more or less evident. . . . Most authors dwell much upon this symptom as existing generally in congenital brain-tumour; but, in reality, it exists but in very few—in those only where there is little or no fluid. It is not present in encephalocele whilst there is a quantity of fluid in the sac; neither is it present in hydrencephalocele when the protruded brain is itself distended with fluid. . . . With this let a hydrencephalocele be now contrasted. In shape it is more or less pyriform, with a marked contraction at its attachment, sometimes a long and narrow stem; in size it is apt to become much larger than an encephalocele, oftentimes exceeding that of the child's head. The integuments, over-distended, are thinned, with an evident tendency to cracking and bursting; fluctuation, more or less distinct, exists about the hernia, and large and tortuous veins may be traced under the skin. . . . In a large hydrencephalocele the tumour is not affected either by the circulation or respiration; the state of the protruded parts—the distension and thinning of the brain-substance not unfrequently reduced to a mere membrane by the accumulation of fluid in the pouch-like prolongation of the ventricle—prevents this. . . . In endeavouring to establish a diagnosis between the various

tumours of the cranial region, there are two points especially, in reference to congenital brain-protrusion, which ought never to be lost sight of—the congenital nature of the tumour, and the regions in which such a tumour is almost invariably found. A tumour, congenital and situated either in the occipital or fronto-nasal region, ought, in fact, to suggest at once the idea of brain-protrusion. A simple encephalocele may, it is true, make its appearance some short time after birth, and in other parts of the skull; but simple encephaloceles occur very rarely."

The *treatment* recommended by Mr. Hewett consists in compression—provided that the tumour be small and reducible—with paracentesis when the increase of the protrusion is rapid and due to the existence of fluid. Iodine injections are regarded with disfavour, as are attempts at excision, though the latter have proved successful in several recorded instances.

Following Mr. Hewett's elaborate paper is a communication from Mr. T. P. Pick, *On Cleft Palate*. Eleven cases are narrated, in all but two of which more or less successful results were obtained. Mr. Pick advises that the operation should not be attempted during very early childhood, and that when it is undertaken, the whole gap should, if possible, be closed at one sitting. For closure of the hard palate he employs sutures of silver wire, but in the case of the soft palate prefers plaited silk, which he considers preferable to the twisted silk ordinarily sold by instrument-makers. An abundant supply of fluid nutriment is looked upon as an essential part of the after-treatment.

Another paper by Mr. Pick is *On Partial Rupture of Arteries from External Violence*. In this communication are given the details of a very interesting case of femoral aneurism following an injury (probably rupture of the inner and middle coats of the artery) received five months previously. The aneurism, which was treated by digital compression on the proximal side, was distinctly circumscribed when the patient entered the hospital, but became diffused, by the giving way of the sac, six days subsequently. A fortnight later the limb became gangrenous, when amputation at the hip-joint was resorted to, the patient dying four hours afterwards. It is quite possible, as remarked by Mr. Pick, that a better result might have been obtained had the Hunterian operation been employed in the first place, but the great mistake in treatment seems to us to have been in that, when the rapid increase in the size of the tumour, in connection with other symptoms, showed the aneurism to have suddenly become diffuse, immediate recourse was not had either to amputation or to the "old operation," which, in the case of diffused femoral aneurism, is probably the best procedure, and which our readers will remember proved successful in cases recorded by Messrs. Birkett[1] and J. Cooper Forster.[2]

Mr. Pick's communications are succeeded by a short paper *On the Influence of Impaired Hearing upon the Voice and Speech*, by W. B. Dalby, Esq. The author refers to the well-known fact that young children who become totally deaf from the sequelæ of scarlet fever, or other causes, commonly lose also the power of articulation, and become reduced to the condition of deaf-mutes. To prevent this result, he strongly recommends that the system of education by "lip-reading" should be adopted in preference to that which relies upon the use of signs, so that the power of speech and natural tone of voice may be retained, or if lost regained, and the patient enabled to take part in ordinary conversation.

We shall next invite attention to a *Case of Femoral Aneurism*, by Clement

[1] Med.-Chir. Trans., vol. l. p. 431, and No. of this Journal for April, 1868, p. 489.

[2] Trans. Clin. Soc., vol. i. p. 36, and No. of this Journal for Oct. 1869, p. 475.

WALTER, Esq. Mr. Walter's patient was a middle-aged man of intemperate habits, and the aneurism, which was one of recent formation and very rapid growth, involved the left superficial femoral artery and extended to within a short distance of Poupart's ligament. For six weeks, pressure, both distal and proximal, and flexion were tried, but with no good result, and, at last, a ligature was applied to the external iliac artery, the patient dying four days later with symptoms of incipient gangrene. This case is evidently destined to find its way into surgical statistics as a fatal case of ligation; but who shall say how much the prospects of a successful operation were lessened by the six weeks' futile temporization to which the patient was previously submitted?

The next papers, which we may consider together, are a *Case of Cancer of the Upper Lip*, by EDGCOMBE VENNING, Esq., and a *Case of Cancer of the Upper Lip, following on Lupus*, by T. HOLMES, Esq.

Mr. Venning's patient was a man 37 years of age, who had had syphilis four years previously, and the lip-affection, which had begun as a fissure six months before he came under Mr. V.'s observation, was for nine months more looked upon as a syphilitic lesion and treated by the administration of mercury and iodide of potassium, the true nature of the case being thus unrecognized until the disease had existed more than a year, and until almost the whole lip had become involved. Excision was at last resorted to, but the disease recurred in a few months, and the patient died in about a year from delirium tremens. As regards the question of diagnosis we may be permitted to observe that although epithelioma or epithelial cancer of the upper lip is undoubtedly a very rare affection, it is hardly more so than would be a non-primary syphilitic ulcer of the same part, beginning as a fissure, and persisting and slowly increasing without the manifestation of any other symptom of syphilis, and without being in the slightest degree affected by long-continued anti-syphilitic treatment. The appearance of Mr. Venning's patient is shown in a rather too-highly coloured lithographic plate.

In Mr. Holmes's case no doubt was entertained as to the nature of the disease, and the case is chiefly interesting as an illustration of the fact that previous impairment of the nutrition of a part favours the development of epithelioma therein. Mr. Holmes refers to a case in which a tumour, supposed to be malignant, followed lupus in a patient under the care of Mr. Pollock, and adds that he has himself seen several examples of an analogous character.

The next paper is *On Contagious Ophthalmia*, and is contributed by R. BRUDENELL CARTER, Esq.

In this very interesting and practical paper, Mr. Carter adverts to the importance of not mistaking *improvement* for *recovery* in cases of contagious ophthalmia, the disease having a marked tendency to persist in a subacute form, ready to break out and spread upon the slightest provocation. He also explains how the disease is actually communicated through the atmosphere and not, as many suppose, exclusively through the common use of towels, etc.; a certain quantity of the contagious secretion flows through the lachrymal passages into the nose and is thence diffused by the expired air. The author lays great stress upon the propriety of having the sanitary inspection of schools, workhouses, etc., entrusted to skilled medical men only, and not as is too often done to persons who are totally unfitted for the purpose.

"Notwithstanding this," he adds, "it would be unjust to cast overmuch blame upon the inspectors, who, at the worst, commit no graver fault than to undertake to combine with their proper duties others for which they are unfit. At every principal railway station there is a person whose work it is to test the soundness of wheels by tapping them with a hammer. If a deaf man were

selected for this office, and if an accident were occasioned by his failure to recognize the altered sound of a cracked wheel, we should not blame him so much as the superior who employed him. In like manner, the employment for sanitary purposes of functionaries whose sole qualification for them is the rashness engendered by utter ignorance, is the fault not of these functionaries, but of their official head. . . . . It would be idle to deny that there exists, in official and political circles, a widely-spread distaste to the employment of medical men for the performance of their proper functions. The reason is not far to seek. Political arrangements are made up of compromises, while science admits of none. . . . . When a doctor says, 'If you do this, such and such results will follow,' he is, if he speaks truly and from sufficient data, the mere mouthpiece of a physical law, and politicians have yet to learn, or at least to realize, that physical laws cannot be satisfied by half measures, and can neither be broken nor evaded with impunity."

We come next to a *Case of Aneurism of the Aorta and Innominate Artery, in which the Right Subclavian and Carotid were ligatured simultaneously, and on the failure of this operation Galvano-puncture was performed*, by T. Holmes, Esq. This case, which unfortunately resulted fatally, is already somewhat familiar to surgeons from having been referred to in Mr. Holmes's excellent course of lectures before the Royal College of Surgeons, published in the *Lancet* for 1872. It is, however, a case of so much interest that we are glad to find the full details of its history placed on record in a more permanent form than in the pages of a journal. The ligatures employed were of carbolized catgut, the wounds healing over the ligatures, and no trace of the latter being found at the post-mortem examination; the immediate cause of death appears to have been inflammation and sloughing of the aneurismal sac, if not as a consequence of, at least following very closely upon, the use of galvano-puncture. With regard to *diagnosis*, Mr. Holmes says:—

"After the most careful study which I have been able to give to the subject, I am still unable to point out any symptoms which would enable us to distinguish with confidence an innominate from an aortic aneurism. I am aware that diagnostic symptoms have been pointed out, but I have not found them trustworthy in practice, and I am led to believe that they have been deduced not so much from the observance of cases, as from *à priori* anatomical considerations, which in a region so complicated as this is cannot but be very liable to deceive. . . . . In a case in which the tumour is almost or altogether limited to the situation of the innominate artery, where the heart and its valves seem healthy, and where the difference between the pulsations of the carotid and subclavian (or their branches) on the right and left sides is well marked, it is fair to regard the aneurism as innominate, and to treat it accordingly."

As regards *treatment*, Mr. Holmes is disposed to hope much more from ligation of the carotid artery, than from that of the subclavian; the application of a ligature to the latter vessel in its third part (as a distal operation), he looks upon as being yet on its trial; tying the first part of the subclavian, he justly remarks, has so far been found more dangerous than letting the disease alone.

The *Report of Surgical Cases for* 1870–71, by J. W. Haward, Esq., and the *Report on the Department for Diseases of the Ear*, by W. B. Dalby, Esq., are both meritorious productions. The former contains numerous elaborate tables which will furnish a valuable mine to those who are fond of working in surgical statistics, while the latter gives an interesting account of the modes of treatment pursued at St. George's Hospital in cases of aural catarrh. J. A., Jr.

We shall now proceed to notice the remaining papers of the volume, and first a short article entitled *Remarks on the most common forms of Cutaneous Diseases in Children*, by Dr. R. J. Lee. The author combats the statement

made by Vogel (*Diseases of Children*), that the same forms of cutaneous eruptions are met with in early as in adult life, and then proceeds to apply to the skin diseases of children the principles which Prof. Hardy has applied to cutaneous diseases in general.

Dr. Lee arranges the skin diseases of children under the four classes of Prof. Hardy, viz.: the dartrous, the occasional, the scrofulous, and the syphilitic; the class to which each disease belongs being defined by reference to the following points, namely: constitutional or hereditary tendency, local irritation, duration, liability to recurrence, and the conditions in which the skin remains after the disease has subsided.

In the succeeding paper Dr. GEO. CORDWENT narrates an extremely interesting case of *Sudden Death by entrance of Air into the Uterine Veins.* His patient was aged 28 years, and had proceeded favourably to full term; her expulsive pains became urgent, and at her request she was permitted, in the absence of her medical attendant, to remain standing; after a few severe pains, a fine, living, male child was expelled, and, falling to the floor, dragged with it the whole placenta. Almost immediately afterward a kind of gurgling sound was heard by the attendants, but whether that arose from rumbling in the bowels, they could not say. The patient remained about a minute standing as before, and holding on to the bed-post; she then cried out, "I can't see! I feel faint! lay me on the bed." Her request was obeyed, and she instantly died.

On examination twenty-four hours after death, the uterus externally presented the appearance attributable to recent child-birth, except that a portion of the wall of its fundus, to about the extent of a "five shilling piece," was slightly more puffy than the other portions; and on cutting into it air bubbles escaped. There had been no laceration of the placental surface; the uterine cavity contained only one small clot; its lining membrane was healthy. The coronary vein of the stomach was distended by air and contained only a fine thread of blood. The right side of the heart was slightly gorged, and when the auricle was punctured, air-bubbles escaped from its contained blood.

Dr. Cordwent believes that the entrance of air into the uterine veins is a very frequent cause of that frightful faintness and collapse which, after hasty placenta expulsions, is ordinarily attributed to loss of support to the organs of circulation. That air enters freely the cavity of the uterus after hasty delivery is known by the loud, sudden, almost startling flatulent explosion with which it is sometimes expelled. What more likely, asks Dr. Cordwent, than that portions of air should pass into the mouths of the veins at any moment when they may not be filled by outpouring blood, nor by clot, nor by application of placental surface? This deadly entrance of air, however, nature beautifully guards against by a peculiar construction of the veins, necessarily exposed after child-birth, by which they are smaller at their orifices than in their continuity within the wall of the uterus.

"In this construction of uterine veins, as in the phenomena of disease, we see nature often guarding life not by one barrier alone. So in this normal process we are now discussing, although the uterine veins are guarded, as I quote, by orifices smaller than their immediate tubes, the *primary* security against entrance of air is a due period of application of placental surface, and that due period I interpret to be, not only sufficient for it to act as a foreign body—foreign as the hand, but less offensive—but that it remain suitably supporting the uterine cavity until gradual contraction gently expels it; and expelled by this means, I have never known the placenta fail in the essential of bringing with it the whole of its membranes. By avoiding unnecessary and therefore offensive traction at the funis, we also avoid to a great extent the hour-glass

contraction, and the great evil of abrupt exposure of an insufficiently prepared uterine surface."

The important lesson to be derived from the above Dr. Cordwent teaches in the following language:—

"I echo, with all the earnestness a strong conviction can inspire, the inculcation of those great men, the Hunters and Denman, that in ordinary labour the placenta should not be artificially removed in a shorter time than four hours."

Dr. Robert J. Lee contributes *Some Remarks on Inhalation*, which are followed by a short paper on *Indican in the Urine* from the pen of Dr. Francis Laking. In the opinion of the author of the latter article, the presence of indican in the urine is not, and its absence is, indicative of disease; and he is inclined to believe that there exists a relation between indican and carbolic acid which has not yet been defined. The natural odour of urine is said to depend upon the presence of a minute quantity of carbolic acid; the urine of patients absorbing carbolic acid certainly emits an increased odour, and gives a more marked indican reaction.

"The source of the indican in normal urine," Dr. Laking says, "I cannot pretend to say, but I think it must in some way be formed from the natural carbolic acid in the urine; for, when indigo is subjected to destructive distillation, ammonia and aniline are produced. Again, when carbolic acid is heated in a sealed tube with ammonia, aniline is formed; and, chemically, the composition of indigo and carbolic acid are not unlike. In that rough test for the presence of carbolic acid, by dipping a shaving of deal-wood into the suspected fluid, and then into hydrochloric acid, if carbolic acid be present, the chip becomes blue on being dried in the sun. May not that blue colour be indigo?"

The next article is *On the Employment of Quinine in the Treatment of Rheumatic Fever*. In this suggestive paper Dr. A. W. Barclay discusses the efficacy of the alkaline treatment of rheumatism, and while acknowledging as rational the endeavour to neutralize the acid which is so abundantly formed in rheumatic fever—one of the never-failing and evil accompaniments of the disease—he questions how far we succeed in attaining our object, since we find the salivary glands and the sweat glands pouring out acid abundantly in spite of the quantity of alkali taken into the system and circulating in the blood.

"In fact, as rheumatism is not merely acid but an acid-generating disease, so till the disease ceases the tendency will go on; and yet, after all, we are probably doing a real good, though we cannot by treatment succeed in arresting the acid formation. Notwithstanding the passage of an excess of alkali through the blood, and a highly-alkaline reaction of the urine, the disease will go on for some time unchecked, fresh joints become involved, and even cardiac inflammation may be developed. In fact, whatever may be said of the alkaline treatment of rheumatic fever, it cannot be called curative in the proper sense of the term. It may help to shorten the duration of the attack, it may serve to lessen the intensity of the inflammation, it may diminish pain, and it may not unfrequently ward off those more serious consequences which give to rheumatic fever its formidable character as a cause of heart-disease. All this it may do, and in my own opinion, and that of many others who have made the experiment, it does actually accomplish, but it does not cure. It does not put an end to the paroxysm, as bark puts an end to an attack of ague; it does not eradicate the disease, as iodide of potash will eradicate the traces of syphilis, commencing as soon as the system is sufficiently saturated by full doses of the remedy, and continuing till complete recovery takes place, with a progress unbroken as long as the remedy is used, retrograding as soon as it is left off."

Acid formation, while a very important, cannot be the essential, cause of rheumatism; still reason and experience point to the benefit to be derived from neutralizing that excess by the administration of alkali. To what extent this is to be done, and what are the dangers on the one hand, and the safe-

guards on the other, are points which Dr. Barclay seeks to elucidate. He recognizes the "depression" which results from the long-continued use of alkalies, and discusses some of the means which have been tried to counteract it. (The evidence of the existence of "depression" he finds in the presence of a phosphatic deposit in an alkaline urine.) Stimulants avail to a certain extent, but have seemed to Dr. Barclay to tend of themselves to keep up the disease, to lengthen its duration, and even to re-excite it after it has subsided. Quinia is the remedy which in the author's hands has answered best, and under its use he has found the phosphatic deposit almost always to disappear.

In a short paper *On the Therapeutical Action of Sulphur*, Mr. CHARLES ROBERTS narrates a few experiments undertaken to ascertain if possible the precise therapeutic value of sulphur. The conclusions which he reached are that sulphur is not oxidized or volatilized at ordinary temperatures; when perfectly pure it is inert, and its well-known action as a parasiticide is to be attributed to the accidental presence of sulphurous and possibly sulphuric acids in the sulphur employed.

The practical application of this result can be readily inferred.

A very interesting paper *On Thrombosis in Cases in which the Arterial Walls and Viscera are Natural*, with the notes of eight such cases, is contributed by T. WHIPHAM, M.B. By limiting his observations to those cases of obstruction of cerebral arteries by fibrinous coagula in which other disease was absent, the author has presented a study of only those cases in which the thrombosis must have been dependent either upon the condition of the blood or of the arterial walls. In the latter case the cause is thought to be a local arteritis, the inflamed wall of the artery acting as a foreign body upon the blood and causing it to coagulate at the affected part. On the other hand, in persons whose powers are exhausted by dissipation or want, a tendency to coagulation is developed in the blood, and in most of these cases the obstruction which occurs is very extensive, and death very speedily results.

In those cases dependent upon a local inflammation of the arterial walls, the first symptom appears to be a convulsive seizure, or a slight attack resembling syncope, often unattended with actual loss of consciousness, but speedily followed by hemiplegia. Recovery from the paralysis to a great extent occurs as the circulation is restored, either by tunnelling of the clot, or by arterial anastomosis. Similar attacks, the result of like obstruction of the large vessels at the base of the brain, may occur at subsequent periods extending over several years, in fact so long as the circulation can be restored. Finally the plugging of some important vessel occurs after the circulation of other large arteries is interfered with, so diminishing the blood supply to the brain tissue that eventually softening takes place and death speedily follows.

The symptoms in those cases where the blood has a tendency to coagulate are somewhat different. The first attack is usually of the nature of syncope, and unattended by convulsive movements; death rapidly, in many cases almost suddenly, follows, though this may be in some measure due to the fact that the coagulation has occurred in large and important systems of vessels, such as the pulmonary, where any great interference with the circulation must of necessity be rapidly fatal. Another fact which characterizes most of these cases is the depressed or exhausted condition of the patients, which in some cases existed for a considerable time before death.

A very elaborate paper *Regarding certain Influences experienced by the Nervous System upon Bone* is contributed by JOHN W. OGLE, M.D. The author gathers facts to illustrate his inquiry from operations or experiments upon the lower animals, from certain accidents and injuries to man, and from cases in

which known defects or perverted action of nerves or central nerve organs are attended by abnormal conditions of bone.

Illustrations are derived from various sources showing the influence exerted upon bony tissue by nerve and nervous centres: and of interference with its condition arising from modifications in nerve action, in some cases resulting in hypertrophy, and in others producing special conditions of the bone-tissue owing to changes of structure following changes in its vascularity, etc. Clinical experience points to the conclusion that any interference with the supply of blood to bone-tissue affects its nutrition; and the influence of nerves in regulating the blood supply is too well known to require the production here of the proof of it.

The *Report of Medical Cases admitted during the years* 1870–71, and the *Report of Maternity Department from* 1854 *to* 1871, *inclusive; with Observations on Revaccination during the Smallpox Epidemic of* 1871, conclude the volume, which, so far as the papers we have just noticed are concerned, we regret to say, fails to fully represent the rich stores of clinical experience which the above mentioned reports tell us annually accumulate within the medical wards of St. George's Hospital. I. M. H.

ART. XXVI.—*Experimental Researches on the Causes and Nature of Catarrhus Æstivus* (Hay Fever or Hay Asthma). By CHARLES H. BLACKLEY, M.R.C.S. Eng. 8vo. pp. ix., 202. London: Ballière, Tindall & Cox, 1873.

NUMEROUS treatises on this disease have appeared in England and on the Continent since it was first described by Dr. Bostock in 1819. More recently, thirty of these have been collected, and with additional observations combined in an essay by Dr. Phoebus, of Giessen. It would seem, therefore, that the literature of this singular affection is sufficiently full. Mr. Blackley's book, however, differs from its predecessors; his object is to give a record of his investigations into the causes and nature of the disease, besides which he gives us speculations growing out of his view of the facts obtained. The causes, as held by various writers, are enumerated and examined. Dr. Bostock believed that in his own case, the disease had no connection with hay, but was dependent upon the effects of heat and sunshine, especially after bodily exercise. Dr. Gordon attributed it to the aroma of grass flowers, especially to the *Anthoxanthum odoratum*, a sweet-scented vernal grass. Dr. Elliotson sides with Dr. Bostock, while others, with Dr. Phoebus, taking a wider view of the subject, attribute it to a peculiar idiosyncrasy combined with certain unknown causes acting during the heats of summer, and that with this predisposing state of things accesses or exacerbations may be produced by a variety of exciting causes, such as the odour of certain flowers or their pollen, smoke, dust, either vegetable, mineral, or that having certain chemical qualities.

Mr. Blackley starts with the idea that, although there may be other agents than pollen which may produce symptoms not unlike those of hay fever, they have not, as yet, been found; he therefore proposes to confine his attention to the phenomena of the disorder brought on by pollen. Nevertheless, he examines a few substances which have been suspected as causes; among them benzoic acid, coumarin, or the odoriferous principle found in some of the grasses and other plants and easily obtained from the tonka bean; odours of various kinds; ozone; dust, and the influence of light and heat.

The inhalation of the vapour of benzoic acid produced no effect resembling hay fever, nor did breathing the air of a room filled with the odour of coumarin from the tonka bean. The odour of plants or flowers or the vapour of their essential oils all produce "head symptoms," of what kind is not stated, but no hay fever symptoms. The inhalation of the spores of *Penicillium glaucum*, a microscopic fungus found in straw, "produced hoarseness going on to complete aphonia," lasting "for a couple of days, and ending in a sharpish attack of bronchial catarrh, which almost unfitted me for duty for a day or two." These spores, he thinks, come near to the exciting cause of hay fever, but he believes them capable of producing symptoms of a much more acute and dangerous character; the result of his experiment, he says, agreeing to some extent with the observations of Dr. Salisbury. But Dr. Salisbury alleges that he produced with these same spores measles with its distinctive eruption in those who had not previously suffered from measles (a result which has not been obtained by other and competent observers), a disease which can hardly be confounded by a superficial observer with hay fever.

The experiments to determine the influence that pollen may have when directly applied to the mucous membrane are much the most interesting parts of the book. Others had already inhaled pollen and noted its effects, and the belief has long existed that it is a cause of exacerbations during the usual hay fever season. Mr. Blackley has pursued the subject with perseverance. His experiments are numerous, not only with the grasses, a prolific source of pollen, but also with that of thirty-five other natural orders of plants. The pollen of the pines and spruces, which is given off in such quantities in the so-called sulphur shower, and which from its peculiar shape is easily distinguished from that of grasses, is not among the number. The dates of the experiments are not given, but they are stated to have been made at all times of the year, generally upon himself only, but occasionally upon others. In some cases the dried pollen was used after it had been kept some months, but for the most part this was used during the period in which the plants indigenous to the country were in flower, whilst the pollen was fresh. The grasses were first tried; the pollen applied to the nostrils produced itching of the part, sneezing, and a free discharge of serum followed by swelling of the mucous membrane impeding the passage of air. In some instances these effects had not passed away in twenty-four hours. The effects of pollen from wheat, oats, and barley were similar. Applied to the eyes it produced in some cases effects like dust, in others irritation of the conjunctiva, with chemosis lasting some hours. The tonsils and fauces were similarly affected. These effects, which are assumed to constitute hay fever, varied in severity; in some cases they were so mild that it was necessary to repeat the experiments several times and under varying circumstances, in order to be certain that they were present. But, says Mr. Blackley, "whatever may be the nature of the influences which modify the activity or power of pollen in producing hay fever, this power was always present in a greater or lesser degree in all the plants experimented with." The causes of these effects are partly mechanical and partly physiological; of the former some are believed to be due to the changes produced in pollen by the moisture of the part upon which it falls, and the consequent discharge of the contained granular matter on the bursting of the cases. This granular matter Mr. Blackley "found by experiment may, by dialysis, be made to pass through membranes which are thicker than those which line the air vesicles and bronchial tubes."

The pollen of a variety of the Darnel (now, by the exhaustive experiments of Mr. Wilson, freed from the charge of being the only poisonous grass), when applied to the abraded skin, produced a copious serous effusion into the sur-

rounding cellular membrane, similar to that produced by the Buttercup, Thapsia, and some other plants upon skin not deprived of cuticle.

Observations were made to determine the quantity of pollen in the atmosphere at various times for comparison with the intensity of hay fever symptoms at the same time. The pollen was collected in the usual manner on glass slides of a certain area, in this case a square centimetre, smeared with an adhesive substance; the number of grains caught in 24 hours was counted under a microscope. Two sets of experiments were tried; the first in a hay field while the grass was in flower, and the second during the following season, in a quadrangle, in the outskirts of a city, with no grass plats within a third of a mile. The first series of observations was commenced early in April, and ended August first. During the month of April very little pollen was found; a table of curves is given of the number of grains on each slide exposed from May 28th to August 28th. This number varies greatly within short periods, especially under the influence of rain or wind, the first diminishing and the last increasing it. May 19th, there were 5 grains; May 28th, 880; and again six days later but 5. The relation of quantity to intensity of symptoms is obviously difficult to determine, the observations were made upon the author alone. The record of symptoms is given but for five days, while that of the quantity of pollen is given on more than forty days. "In all the experiments I have tried, one fact stands prominently out, namely, that a certain amount of pollen may be present in the air without producing in me any appreciable symptoms." (§ 218.) "The day on which the highest number of grains was found the symptoms were in some respects not so severe as might have been expected." This is attributed to the closure of the nostrils on that day, under the influences of the disease. Notwithstanding these discrepancies, it is stated that the highest point in the table of curves corresponded tolerably well with the periods of the greatest intensity of the disease, and the author believes "the facts show conclusively that hay fever in my case is due to the presence of pollen in the air." It would manifestly have given the reader a much better means of judging of the relation of intensity of symptoms to quantity of pollen, had the records of the two been more nearly equal. In the still air of a room the pollen thrown off from a plant fell to the ground and did not produce any symptoms which could fairly be attributable to it.

The second set of experiments, between May 28th and August 2d, of the following season, were made at a distance from any grass land, and gave, as might be expected, a smaller number of grains; the highest being 105 in 24 hours, and the lowest 5; neither were the changes so sudden as in the previous observations in the hay field. As to the symptoms, we have the general statement that "they corresponded very closely with these changes; on one day, May 23d, that on which the highest number was collected, the record was that of the worst day since the attack commenced. A number of experiments two years later, half a mile nearer the open country, gave results practically midway between the two others. The symptoms are said in general to correspond with the quantity of pollen, but the details are not given. The average quantity of pollen during the ten days in which it was greatest in 1866, in the country, was 10 times that of 1867 in the city, and this corresponds with the intensity of the suffering in these two situations.

By means of kites pollen was collected at altitudes ranging from 300 to 1500 feet. The result showed the suprising fact that more than nineteen times as much pollen was found at high elevations as at the surface of the ground; or, to speak with the exactness of our author, these quantities were as 24 to 472.33. In one, the only successful experiment, made at an altitude of 1000 feet, after the wind had been blowing more or less from the sea for twelve or

fifteen hours, and with no land to the windward for 400 miles, the glass showed 80 pollen grains while that on the seashore showed no pollen "or any solid matter whatever." "This experiment has shown," says Mr. Blackley, "that living germs may be carried, by the upper atmospheric currents, long distances across the sea, while the lower strata of air may be perfectly free," producing, as he thinks, a zone of atmosphere commencing some distance above the earth which contains a much larger number of germs and spores than is found in the lower portion of the atmosphere. That air next the sea, against which it is driven, should give up its solid matter seems probable, but the second inference seems to us hazardous until we shall have more than a single experiment and know more of the upper currents.

The influence of light and heat in producing the disease does not seem to be considerable, judging from the great heats borne in India without symptoms of it, by persons who suffered from hay fever in England; but the evidence is sufficient to show with great probability that hot, dry, and dusty weather is that in which there is most suffering, and that heat and light bring on exacerbations.

A chapter on the history and nature of hay fever follows. Mr. Blackley thinks it was unknown in early times, and that it is now on the increase in consequence of the greater intellectual activity of the more numerous class, and the greater nervous susceptibility caused by indoor occupations, and that from these causes and others it will continue to increase. The symptoms are given with the author's explanation of them. The dyspnœa, not only in hay fever but in all cases of asthma, is attributed to infiltration with serum of the submucous cellular tissue of the air-tubes, and never to spasm of the muscular fibres, as has been so well explained by Dr. Salter. The closing of the nostrils is caused by a similar infiltration, the alternate opening and closing of these passages to gravitation of this fluid from nostril to nostril, to which the septum is not supposed to offer any obstacle, and not to changes, under the influence of the vaso-motor nerves, in the rich venous plexus underlying the mucous membrane of the nose, changes which are so easily observed in the conjunctiva. As to treatment Mr. Blackley expresses himself as more than doubtful as to any course now known which can produce a cure, but he does not leave his patient without hope. "I am," he says, "at the present time engaged in experiments on the action of various agents, and hope to be successful in my search for an effectual remedy for the disorder, though the time," he subsequently adds, "may be somewhat distant."

Mr. Blackley deserves great credit for his patient investigations into the effects of pollen applied to the nostrils or inhaled in the air-tubes, and also the determination of the quantity in the air during the hay-fever season; but that no other agent than pollen is known to produce similar symptoms, and that the disease should therefore be called "pollen catarrh," many would not admit. The following are some of the objections to his theory: Of the thirty-five different natural orders, besides grasses, the pollen of which was examined, nine-tenths have flowers which, either by their glutinous properties, the weight of the pollen grains, or the mechanical obstacles presented, effectually prevent the dissemination of their pollen in the air, and are, therefore, fertilized by insects. Take, for instance, the bean flower, which patient 5, in Mr. Blackley's book, says "is as trying as a hayfield." It is so completely boxed up that no pollen can escape; it is only obtained by insects and by them transported. Then again of the rose, which has given the name to the disease in some parts of England, and of which patient 2 says: "If I gather them, a very severe attack immediately supervenes, more than from any other flower." It is well

known that the double varieties, those usually cultivated and, therefore, most likely to be gathered, are neutral, having neither stamens nor anthers, and consequently no pollen. It is a singular fact, pointed out by Dr. Wyman in his essay on *Autumnal Catarrh* (New York, 1872), that persons in New England who have "rose cold" or hay fever there in June, have escaped a similar affection at the same season of the year in England, notwithstanding that the grasses which are said, by our author, to furnish 95 per cent. of the effective pollen found in the air, according to Dr. Gray, our most eminent American botanist, are botanically identical in the two countries. Again, many of the flowers and other agents, which produce the symptoms of hay fever at the critical season of the year, are apparently powerless at other seasons, although, while in full bloom in conservatories, they are visited by persons who had previously suffered. The evidence in favour of other exciting causes than pollen does not seem to us quite fairly weighed. The dust of the highway, so annoying to hay-fever patients, Mr. Blackley assures us is only thus annoying because of the pollen which is mixed with it, although he also assures us that the effects of pollen are partly mechanical, and that a certain amount of pollen may exist in the air without appreciable symptoms. So again, the dust and smoke in a railway carriage, which almost invariably at the proper season bring on a paroxysm even when there are no hay-fields near, are, he thinks, wrongfully suspected; the true cause is the pollen brought in the carriage from regions where grass is in flower: "That this is not a matter of speculation," says Mr. Blackley, "my own experience abundantly proves." Until he shall have given us the method by which he distinguishes the effect of the dust from that of the pollen, he must permit us to deem his explanation farfetched. Notwithstanding the evidence of the controlling influence of theory, and a disposition to speculate and generalize on too narrow a basis of facts, the reader will find in this book much that is new and instructive. M. W.

ART. XXVII.—*Die Diagnose der Eierstocks Tumoren, besonders der Cystomei.* Von OTTO SPIEGELBERG. Sammlung Klinischer Vorträge, No. 55.
On the Diagnosis of Ovarian Tumours. A clinical lecture. By OTTO SPIEGELBERG, March, 1873.

THIS lecture belongs to a most excellent series now in course of publication in Germany; a course of clinical lectures upon practical subjects, by eminent men, in every branch of the profession, chosen from every part of the country. The one before us bears the name of a renowned obstetrician and gynæcologist, and is of especial interest to us at this time because following closely upon the publication, in England and this country, of important works upon ovarian disease and ovariotomy which have been reviewed in our pages, and also because showing that Germany, late as she has been in taking up this important advance in our art, has already close and thorough students of it.

The lecture opens with the relation of two cases of pelvic tumour. In regard to the nature of one there was a difference of opinion, which neither the chemical nor microscopical characteristics of a specimen of its contents, withdrawn by puncture, could reconcile; but a diagnosis of ovarian cyst was finally made by resorting to Simon's manual examination *per rectum*, and confirmed by the operation of ovariotomy. In the other, all the usual measures having been exhausted, an exploratory incision was resorted to, and the feasi-

bility of the removal of the tumour negatived. Eight weeks afterwards the patient died, and it proved difficult even at the post-mortem examination to make out its sole origin from the uterus, its implication of the various pelvic organs, and the non-participation of the ovaries in the morbid growth.

These cases furnish the text for a lecture upon the diagnosis of ovarian tumours, which is, of course, neither methodical nor exhaustive, but which presents some points of interest deserving of mention.

In settling the first question which presents itself upon commencing the examination of a case, viz., "does a tumour exist?" he states the well known application of chloroform as a means of diagnosis, but where persistent tympanites causes the error, says that he attains his end more readily by *persistent and firm pressure upon the abdomen*, a plan already recommended by Rœderer. The patient lying on the back with limbs drawn up—

"I exert a steady pressure towards the spinal column with both extended hands; as, with expiration, the parietes of the abdomen relax, I press with all my strength, hold what I have gained against the next inspiration, and so continue the manipulation, and the resistance of the patient is soon overcome. By this plan I have already convinced many esteemed colleagues and many patients of the groundlessness of their fears."

After detailing the differential diagnosis between ascites and ovarian cyst he alludes to those cases in which exceptional conditions are present and may mislead. In some of these cases he has found assistance from a rule first laid down by the late Prof. Breslau of Zurich:—

"In a cyst the fluctuation ceases where the intestinal resonance begins (loins and epigastrium), for both are bounded by the sac-wall; but if the fluid moves freely through the abdominal cavity, if it passes between the coils of the intestines (ascites), then fluctuation will be perceived even in places where percussion gives the intestinal resonance."

But, all other means of diagnosis having failed, puncture and examination of the fluid withdrawn is to be resorted to and is a measure in which the author has the highest confidence, and one which he uses in all cases of doubt. He admits that it is not without its dangers, but says nothing of two fatal cases attributed to him by Peaslee. It is a measure, too, which he believes is not estimated by authors as highly as it deserves, and for proof refers to Spencer Wells's "lately published and otherwise so excellent book;" and to Peaslee's "perfectly equally valuable work." Atlee alone, of all the later authors, he believes duly esteems the value of the diagnostic puncture; yet, he says, "the description he gives (pp. 57–60) and particularly in the twenty-fourth chapter, from Drysdale (pp. 442–469), do not reach the level of our German investigations."

In his detail of the organic substances found in ovarian cysts he seems to follow Eichwald, as does Wells, and lays particular stress upon the presence of paralbumin, a substance never found in ascitic fluid. He emphasizes the value of the morphological part of the examination, and enters on it particularly "on account of misconceptions of the subject," referring again to Wells. His diagnosis from these substances rests on the presence of the endothelium of serous membranes in the one and the epithelial elements in the other; on the character of the cells furnished in accordance with the parts from which they were developed rather than on any particular cell which can be looked upon as characteristic of either fluid.

"You see therefore that peritoneal fluids furnish the elements that are to be expected from a lymph-sac, cysts those of epithelial formation. This distinction is decided, and where it is clearly found, decisive. I refer you to the case of F.; cylindrical cells were the only bodies found in favour of an ovarian cyst,

and this the operation proved it to be. I have published similar cases in my archives, and I have been enabled several times, from the simultaneous appearance of lymphoid and epithelial cells, to make a diagnosis of communication of the cyst with the abdominal cavity, or the coexistence of ascites with cysts."

He then places in juxtaposition the characters of the two fluids, but we find no mention of any one peculiar cell as characteristic of ovarian cysts, or the discovery of any one body alone relied upon for diagnosis.

The great and surpassing difficulty of diagnosis which lies between ovarian and fibro-cystic tumours of the uterus is well known. The author recognizes it clearly and acknowledges that there are cases likely to deceive the most experienced investigator. He alludes to the spontaneous coagulability of the fluid of uterine cystic disease, as given by Atlee, but has had no opportunity of verifying the observation. In these obscure cases two resources remain; an exploratory incision and the introduction of the hand into the rectum, as advised by Simon. The paper of Simon was noticed in this Journal for April, 1873, p. 548, and the procedure, which of course takes place under complete anæsthesia, is there described. We give the author's experience:—

"In six cases in which I found this measure necessary I succeeded in the introduction of the hand without difficulty, and without division of the raphe, only one or two very superficial incisions being made in the anterior margin of the anus. In one patient, a young woman who had never been pregnant, the incision tore through the sphincter; the wound healed by granulation and in twelve days full power was regained; in the other cases all was right in three or four days. A thorough knowledge of the topography of the pelvic organs is, of course, necessary in order to be able to distinguish parts with the hand, thus in the rectum and fingers extending upwards; but whoever has never yet availed himself of this method, cannot imagine how thoroughly the pelvic cavity can be explored, and changes in size or position of its organs recognized. Even the character of a tumour may sometimes be decided by it, as you saw in F.'s case, for the segment of the cyst recognized *per rectum* decided the diagnosis. In other cases you will be able to feel the very origin of the tumour and thus make an absolute diagnosis, or, again, by mere negative results, do this *per exclusionem*. Thus, in a case where it was doubtful whether the tumour was ovarian located in front of the uterus, or a fibroid springing from this organ, several *cliniciens* had given different opinions, and I myself could not by the ordinary mode of investigation arrive at a definite conclusion. I felt directly the origin of the pedunculated sub-peritoneal tumour from the fundus of the uterus, and therefore prevented the desired and intended ovariotomy."

To the last diagnostic resort, exploratory incision, Dr. Spiegelberg has had recourse four times. In one ovariotomy followed immediately; in the second he discovered an ecchinoccus cyst behind the peritoneum on the left side, cut out a portion and stitched the remainder to the wound; the patient recovered; the third was one of the cases detailed, the patient dying after a couple of months; in the fourth, the tumour was found not to be removable and the wound closed, the patient suffering only a slight attack of local peritonitis.

The lecturer has found the diagnosis of renal cyst, when long-standing and of large size, the most difficult task of all, and refers to a publication by one of his pupils[1] for the detail of numerous examples of errors, and of one case by himself. He refers to the eight propositions laid down by Spencer Wells upon this subject, and says:—

"But neither the location of the tumour, nor the situation of the intestines in relation to it, nor the disturbances of function, are, in advanced stages, abso-

[1] Diagnostische Irrthümer, welche bei ovariotomien vorgekommen sind. Breslau, 1867.

lutely reliable. I have shown that a renal tumour may be in a median position, and that it may extend into the pelvis like an ovarian tumour; and there may even be, as in Baum's and Dumreicher's cases, adhesions to the pelvic organs; I have also emphasized the fact that such tumours may have the intestines over them or on the side of them, they being pushed aside or the mesentery even perforated, and it is well known that ovarian cysts sometimes have intestinal coils in front of and under them. Tumours of the kidney may be movable and those of the ovary immovable; the original location of the growth is only to be discovered in the early stages, and then perhaps is only made by accident. The puncture will enable us to decide in many cases, by giving proof of the presence of the epithelial forms peculiar to the ovaries, or the renal elements, such as the sediments of the urine, urea, ecchinococci (for this parasite has never yet been met with, so far as I know, in the ovary); but even these may deceive, for urinary constituents are not always found in the contents of nephritic cyst, and may perhaps be found in the ovarian (Hanauyn found allantoin), even ecchinococci may be present and furnish no evidence of their existence; and on the other side, again, cholesterin and paralbumin have been found in the kidney cysts. In such circumstances, the manual examination *per rectum* is of the greatest value, for by it can at least be proved whether the cyst has its origin in the pelvis or not, and by this help exceedingly to clear up the diagnosis, even when the origin itself cannot be reached."

Possibly we have occupied too much space with this examination of a single clinical lecture. If so, we plead in excuse, the high authority from which it emanates, and the interest attaching to a subject not yet entirely mastered and which will always present to the diagnostician his severest problems.

J. C. R.

ART. XXVIII.—*Die Kaltwasserbehandlung des Typhus Abdominalis nach Beobachtungen aus der Medicinischen Klinik zu Erlangen.* Von Dr. HUGO ZIEMSSEN, O.Ö., Prof. der Spec. Pathologie u. Therapie, Director der Klinik, etc., und Dr. HERMANN ZIMMERMANN, Assistentarzt, etc.

The Cold-water Treatment of Typhoid Fever, according to Observations in the Medical Clinic in Erlangen. By Dr. HUGO ZIEMSSEN, Prof. of Special Pathology and Therapeutics, Director of the Medical Clinic and Polyclinic, and Dr. H. ZIMMERMANN, Assistant Physician, etc.

THE practical object of this book is to show the effects of cold water upon typhoid fever; to furnish statistics; to lay down exact methods of using cold water in this disease; to present statements of careful study of temperature under its use, and to afford proofs of the success which the authors claim to have followed upon the mode of treatment in question.

In 1861 Ernst Brand recalled the attention of the medical public to the use of cold water in typhoid fever, first adopted by Currie and his disciples. Following Brand, Ziemssen, Gietl, Niemeyer, Bartels, Jürgensen, Liebermeister, and Hagenbach in their respective clinics, entered upon a systematic use of hydro-therapeutics in typhoid fever, each and all becoming converted to the usefulness of the treatment, besides agreeing in the main in regard to the comparative utility of the various ways in which cold water was applied. Ziemssen first adopted Brand's method, that of applying douches to the upper half of the body of the patient, whose lower half was immersed in a bath of cold water. Brand recommends this as the most effectual process. Ziemssen soon discarded Brand's procedure, and passing through other modifications of this treatment, finally settled upon the "graduated full bath," the results of which are given

in this book. His experience with the various applications of cold water was briefly as follows:—

(1) The tepid bath soon proved its utter inefficiency.

(2) The anti-pyretic effects of the cold douche in the half bath (Brand's method) were far less marked than those of the graduated full bath. Besides this, the patients resisted Brand's method, some of them shrieking under the shock of the douche, others becoming violent. Ziemssen insists upon the great benefit of the head-douche as a revulsive in stupor, but disapproves of the body douche.

(3) Cold wet compresses applied around the trunk and used by Brand, between the baths, to prevent a new rise in the temperature, were perfectly inert in the hands of Ziemssen, who found that besides distressing the patient by their weight, they disturbed his rest, caused chills, wet the bed-clothing, and produced scarcely any influence upon the temperature.

(4) The cold pack in a sheet wrung out in water of the temperature of 8° R. [50° F.] produced a greater anti-febrile effect than Brand's douche when four or five packs quickly followed each other, so that the individual packs lasted from five to six minutes. Let the patient remain fifteen minutes in the fifth pack, or for the same length of time in the fourth pack if chilliness have already set in, then carried to his own bed, and the temperature will be found to have fallen 1°–2.5° C. [1½°–4½° F.] The main advantages of this method are that the necessary materials (2 sheets, 2 blankets, and 2 beds) are always at hand, that the patient is kept in quietude and in a horizontal position. But the anti-pyretic effects of the graduated bath are so much more considerable, that Ziemssen considers the cold pack indicated only when the graduated bath is unobtainable, or when the patient is too weak to be moved.

(5) The *simple cold full bath* (temp. 18°–14° R.) [72½°–63½° F.] abstracts heat more rapidly than any other method; is simple and convenient in a well-ordered hospital or in private practice, especially if the same water be used several times. This form of bath, however, cannot generally be used. What is far preferable, in case of sensitive, nervous, weak, aged, or very young patients, also, where the fever is severe and patient wasted, in case of complicating heart disease, or great irritability of the nervous system, is,

(6) Ziemssen's method, the *graduated full bath*. In all the conditions just named, the temperature of the bath should at first be 28° R. [95° F.] During the stay of the patient in the bath, the temperature of the water should be gradually lowered to 24° R. [86° F.] Subsequent baths, according to the reactive powers of the patient and the resulting effects, should be very gradually cooled to a lower temperature. If the effects be satisfactory, the temperature should not be allowed to sink below 22° R. [81½° F.] If the fever be obstinate and patient quite robust, bearing the treatment well, the water may be gradually cooled to a temperature of 16° R. [68° F.] In case of poorly nourished children and chlorotic girls, Ziemssen found that water having a temperature of 23° R. [83¾° F.] sufficed to lower the body-temperature 2°–3° C. [3½°–5½° F.], no rise occurring until after a lapse of four or five hours. The lowering of the patient's temperature in consequence of a simple cold bath is more decided if patient remain fifteen or twenty minutes in the bath, than by a graduated bath of thirty minutes. If the simple cold bath be used but ten minutes, the result is nearly the same as that obtained from a graduated bath of thirty minutes' duration. Hence the former has the advantage of requiring only half the time, and of creating less trouble than the latter, which demands the constant addition of cold water. Ziemssen, therefore, allows the use of the simple cold bath, when the graduated bath becomes actually inconvenient. But the simple cold bath is not admissible under the conditions named in paragraph No. 5.

In opposition to the common advice that patients should be bathed in a tub which is pushed under them as they lie in bed, Ziemssen interdicts the *use of the bath in the sick-room*, since its preparation may disturb the patient. He directs the bath to be prepared in a neighbouring chamber, the patient to be carried thither on a rolling chair or stretcher, and put into a full bath which

has a temperature 5°–6° C. (9°–10¾° F.) below the existing temperatnre of the patient; *i. e.*, if the body-temperature be 40°–41° C. (104°–105.8° F.), the water should have a temperature of 35° C. (28° R., 95° F.). Two assistants should rub the entire body of the patient constantly and lightly with bare hands. Cold water should be gradually added by means of a rubber hose sunk below the surface of the bath, and a means provided for escape of surplus water. When the temperature of the bath after a lapse of ten or fifteen minutes has become lowered to 16° R. (68° F.), the supply should be stopped. A lower degree is seldom necessary. The patient should remain in the bath twenty or thirty minutes, or until, in spite of the rubbing, he begins to shiver. He should then be hastily wiped, wrapped in a warmed blanket, carried quickly to a previously warmed bed, and be well covered. In private practice the sick-room may be set in order and aired during the absence of the patient. After the bath the patient must have absolute quiet, so that the sleep, which commonly follows a lowering of the temperature, may not be disturbed. Ziemssen further recommends the administration of a glass of wine before and after the bath, especially if there be weakness of the heart; also that hot bottles be placed at the feet and the lower extremities of the patient be well wrapped. The fall of the pulse almost to disappearance, during or after the bath, is an indifferent symptom which generally accompanies a decided lowering of the temperature.

Immediately, or at latest an hour, after the bath, the temperature (in the rectum) shows a fall of 1°–4° C. (1⅘°–7⅕° F.). During the first few days, this fall of the temperature is neither so marked, nor is the degree acquired by the baths so enduring, as on subsequent days. So soon as the temperature has again reached 40° (later 39.5°), which may be decided, in case no thermometer be at hand, by reappearance of the flush in the face, heat, and restlessness, the bath should be repeated, be it day or night.

During the first few days of the fever four or five baths in the 24 hours are necessary. Later two or three baths. In severe attacks the temperature rapidly reascends.

The beneficial effects of the treatment, according to Ziemssen, are the following:—

(1) It lessens the duration and severity of the fever and protects the patient from the usual sequelæ.

(2) The patient bears the abstraction of heat much longer and better without chills than by any other form of cold water treatment.

(3) Patients, without exception, praise it, while they energetically resist the other forms; and further, their friends do not object to the graduated bath, but oppose the use of other modes of applying cold water, because of their apparently unkind effect.

The subjective sensations of the patient after the bath are, chilliness, uncomfortable sensations about the heart, and distress in breathing. These are frequent symptoms, but are far less pronounced under the Ziemssen procedure than when a result of other methods. The hour of the day at which the bath is used influences its effects. From 6 to 7 o'clock A.M., and 6 to 7 P.M. are the hours in which the best results of the treatment are shown. The bath from 1 to 2 o'clock P.M. is nearly as helpful as the morning bath. Hence, these three hours are to be preferred. The number of baths per day is influenced by the progress of the patient. The temperature should be taken in the rectum. Ziemssen suggests that the patient has not strength to close the axilla upon the thermometer for a sufficient length of time, and finds that the instrument requires fifteen to twenty minutes in the axilla, but only an average stay of four minutes in the rectum.

As contraindications, the author mentions hemorrhage of the bowels as the most important; obstinate epistaxis, perforation of the bowel, severe disturbances of the brain, which are not effects of the fever, and great fear of the water. The latter objection may be overcome by giving, at the outset, a bath of an agreeable temperature, and gradually cooling. All methods save Ziemssen's are otherwise here contraindicated. Menstruation, severe bronchitis, collapse of the lungs, and pneumonia are not considered contraindications. Pregnancy need not be looked upon as an objection to the use of the graduated bath, neither mother nor child being prejudiced. Great weakness of the heart does not exclude the use of Ziemssen's method, but much watchfulness is necessary.

In regard to the influence exerted under his treatment by the age of the patient and by the severity of the attack, Ziemssen observes, that—

(1) The graduated full bath in a severe type of the fever in children, commonly causes a greater fall of the temperature than is attained in the lighter attacks in adults.

(2) The minimum fall of the temperature in children, in severe attacks, is about 2° C. [3⅗° F.]; in mild, in adults, about 1.5° C. [2⅞° F.].

(3) A fall of more than 2.5° C. [4½° F.] in temperature, cases being light, in adults, and of more than 3.5° C. [6⅓° F.], even in children, is relatively rare.

(4) A fall of less than 1° C. [1⅘° F.], in mild adult cases, is rare; in children still more rare.

(5) In severe adult cases the effect of the graduated bath cannot be prognosticated with so much certainty. The average fall in the temperature (or that most frequently observed) in these cases is 1°–2° C. [1⅘°–3⅗° F.], but may not attain a fall of even 1° C. On the other hand, the fall may exceed 2.5° C. [4½° F.].

The energetic effect of the treatment in children evidently arises from the relatively greater amount of heat abstracted in comparison to the size of the body. A child's body offers a comparatively larger surface to the action of the water, the effect of which also seems to reach more deeply into the body of the child than of the adult. It is further remarked that the same result is very frequently attained in children by a far less degree of cold than would be necessary in the case of adults.

Ziemssen illustrates these points by well-chosen cases, the details of which are too lengthy to be given here. The inconstancy of the effect of the cold water treatment upon the temperature, in severe adult cases, is shown by statistics.

In one case 47 baths produced a fall of only 0.5°–1.0°; 16 baths caused a cooling effect of 1.1°–1.5°; and only 2 baths reduced the temperature 1.6°–2.0°. In a second case, the temperature fell only 0.5° from the effects of 5 baths; 4 baths caused a fall of 0.6°–1.0°; 3 baths, 1.1°–1.5°; and only one bath affected the temperature to the extent of 1.6°–2.0°. These cases were of the intense type, and lacked the usual morning remission during the first stage of the attack.

As regards the duration of the temperature acquired by the action of the baths, it is shown that following their administration the temperature in 147 cases, all being children, remained constant 6.1 hours; in 76 mild adult cases, 6.8 hours; in 203 adult cases with distinctly remitting fever, 6.5 hours; in 84 adult cases, which showed no remission, 3.1 hours. These figures indicate that in severe cases which failed to show remission, a lowering of temperature was not only attained with difficulty, only a moderate effect being produced, but that it also rises twice as soon as in cases, even severe ones, accompanied by remission. In severe cases of remitting character the age of the patient carried with it a distinct influence upon the duration of the antipyretic effects, since in children, in spite of a more rapid fall of the temperature, its con-

stancy was of shorter duration than in severe adult cases. Ziemssen also proves that the later the stage the more lasting and the more efficient is the action of the bath upon the temperature, both in children and adults, in severe or mild, remitting or non-remitting cases.

Referring again to the hours at which the baths are best given, systematized observations upon 436 cases show that the temperature was highest at early morning and at 7 o'clock P. M. Between these hours the temperature stood from 0.4°–0.6° lower than at the hours named. Hence Ziemssen recommends these three periods as the most favourable for the treatment. The temperature after the baths remained stationary for a greater length of time between evening and morning. Between early morning and noon it rose twice as quickly as during the night hours. These statistics make it evident that the patient enjoys a remission of the fever several times daily, while under the ordinary treatment the temperature falls only once in the twenty-four hours.

The comparative effect of the different methods of using hydrotherapeutics in typhoid yields, according to Ziemssen, the following proportions, D : P :: G : C (D. douche; P. pack; G. graduated bath; C. simple cold bath) = 1 : 2 :: 3 : 4. The simple cold bath, therefore, acts with greater intensity than the Ziemssen method, but the latter is preferable because, by proper administration, it can be used in almost any case which admits of moving the patient, while the simple cold bath in many cases is utterly contraindicated.

The characteristic temperature curves under the Ziemssen method show that the effect of the baths is least constant if the exacerbation has set in, and most constant when remission has begun; also that with progressive exacerbation the constancy of this effect, at first slowly, and later always more quickly, increases. Inversely, with progressive remission, the duration of the effect of the baths decreases, in all probability between night and morning.

In regard to the effect of the baths upon the course and duration of the fever, Ziemssen states that while this treatment cannot cause an abortion of the fever, in many cases, especially of the mild variety, its *duration* may be shortened. In support of this statement a table is given showing that in 6 cases the duration was from 15–21 days; in 7 cases 22–28 days; 7 cases ran their course in 29–42 days; 4 cases lasted 50–60 days. Computation as to the length of the stage of convalescence is not sufficiently exact to merit notice. Ziemssen claims for his treatment, however, the power of shortening the remitting stage.

The effect of the cold-water treatment upon the individual symptoms of typhus is next considered. "Concerning the development of the so-called typhoid condition," says Ziemssen, "we can only corroborate the statements of Brand, Jürgensen, Hagenbach, and Liebermeister, viz., that under the hydropathic procedure nervous disturbances are less frequent, and far less severe than under other forms of treatment, and we adopt the theory of Liebermeister, that since the high temperature of the blood is the principal cause of these disturbances, a lowering of the temperature is the best means of preventing their development. This result is the sooner and the more perfectly attained according as the antipyretic treatment is the earlier adopted after the onset of the attack.

Patients suffering from cerebral symptoms become partially freed from them during the bath. One patient, while in a comatose condition, was put into the bath and recovered his senses during its course. Others, who under delirium fought against being put into the bath, were calmed to sleep by its effects. Severe delirium, coma, stupor, etc., continued in spite of the baths in those only of Ziemssen's patients who exhibited either an uncommonly high temperature and experienced only a slight diminution of the same, or who were notoriously in

temperate. The continuation of the brain symptoms in the latter class depended, without doubt, says Ziemssen, less upon the intensity of the fever than upon the effect of chronic alcoholism and a consequently weakened recuperative and resistant power of the brain.

The condition of the heart's activity, as well as that of the pulse, form a valuable standard for judging of the value of the cold-water treatment of typhoid. According to Liebermeister, a rise in the temperature of 1° C. (1¾° F.) implies on the average an increase of 8 beats in the pulse. Clinical experience shows that the pulse-frequency is greater according as the fever is more severe, and also that this increase in the pulse may with great certainty be traced back, in part, to a synchronous rise in the temperature. This leads us to infer that, by artificially lowering the temperature by baths, the heart's beat would be correspondingly retarded. Ziemssen's charts show the justness of this inference, the lines of the pulse and temperature curves in every instance running parallel with each other, ascending and descending together. The average antipyretic effect of the baths upon the temperature is (Ziemssen) 1.5° C. (2.7° F.); the average simultaneous retardation of the pulse-frequency is 14 beats. Liebermeister found that a fall of 1.5° C. in temperature corresponded with 12 beats retardation in the pulse. Brand claims that the dicrotic pulse disappears by this method. Hagenbach saw this result but rarely. Ziemssen agrees with Jürgensen, who asserts that the dicrotic pulse is generally present under the hydropathic treatment, and that the baths do not affect it. The immediate effect of Ziemssen's method upon the pulse, under his own administration, was the following: While the patient was in the bath the pulse became small and soft; in individual cases the pulse disappeared, and cyanosis set in. Ziemssen does not believe a narrowing of the peripheral vessels by spasm is sufficient to explain this feebleness of the pulse and the appearance of cyanosis, but attributes both phenomena to weakness of the heart. This cardiac feebleness, though gradually disappearing, often endures for hours, and although Ziemssen has but very rarely observed disquieting symptoms, he considers it prudent to forbid energetic antipyretic treatment in cases where there may be the slightest suspicion of cardiac weakness.

The influence of cold-water therapeutics upon the origin and development of respiratory disturbances is considered by Ziemssen and others as favourable. Hagenbach asserts (1) that under the hydropathic treatment pneumonia occurs not only more rarely than under other modes of treatment, but that the earlier the treatment is adopted the rarer will be the development of pulmonary inflammation; (2) that this treatment renders bronchial catarrh far less severe, on the average, than when cold water is not used. Ziemssen's experience was that bronchial catarrh occurred just as frequently under cold-water as under different treatment, but found that the baths lessened the catarrh, and that their best effect consisted in protecting the patient from the catarrhal sequelæ. This result relates especially to prevention of condensation of the lung tissue. Ziemssen's conclusions are:—

(1) That splenization of the lungs occurs much more rarely under his method than when the patient is not treated by the cold-water procedure. (2) That the apparent condensation of the lung tissue is generally only a temporary collapse. (3) That even in permanent collapse a later lapse into pneumonia is to be feared only when the reduction of the fever by means of the bath is insufficient.

After the bath, when the consequent chill has been overcome and the patient is at rest, the frequency of respiration becomes diminished. This doubtless depends upon reduced temperature, and a resulting diminution of the respira-

tory demand for interchange of gases. Ziemssen here mentions the occasional occurrence of epistaxis after the bath, and considers it possible that this hemorrhage, as well as that from the bowels, may be a collateral fluxion of the mucous membrane, which arises in consequence of an ischæmia of the surface of the body produced by the baths.

The commonly dry and furred condition of the tongue, lips, and mucous membrane of the mouth becomes decidedly improved by the baths, the condition being only temporary if the baths be used early in the attack. This improvement results from diminution of temperature.

Meteorismus and abdominal pains occurred in 14 out of 62 of Ziemssen's cases, almost immediately after the bath. In the remaining cases in which abdominal sensitiveness on pressure existed, the condition continued unchanged, or diminished only gradually after the baths.

Diarrhœa appears to be less frequent under the cold-water treatment, if the latter be adopted very early. The majority of Ziemssen's cases, however, required the ordinary treatment for diarrhœa.

In case of hemorrhage of the bowels, the hydropathic treatment is unsuitable, unless adopted so early as to limit the extent and intensity of this lesion. Hence, except the hemorrhage be controlled very early in the attack the baths should either be abandoned, or at least be used with such care as to prevent occurrences of hemorrhage. The lukewarm and very gradually cooled bath should only be used, for a collateral fluxion in the mesenteric artery takes place the more easily according as the cooling of the periphery of the body is rendered more sudden and intense. Ziemssen treats hemorrhage of the bowels by ice-bags upon the abdomen, the administration of liq. ferr. sesquichlor., alum, ice pills, and absolute rest.

Our author does not agree with the statement of Gerhardt that each bath lessens the size of the spleen, but states that after *several* baths the volume of this organ becomes diminished. He observed in the post-mortem room that the spleen of patients who had been treated with cold water were smaller, on a corresponding day of the fever, than in patients treated in the usual manner.

Roseola appear to be just as abundant under the water treatment as is ordinarily the case.

Decubitus was observed in only six out of sixty-two of Ziemssen's cases. This favourable result is attributed less to a lowered temperature than to the use of large water cushions.

Herpes facialis and erysipelatous inflammation of the face occurred in two cases respectively.

Sweating occurred under this treatment at the ordinary time (beginning of second, third, or fourth week), but was not considered to contraindicate the treatment.

Albumen in the urine frequently appeared under the water treatment, but not so commonly, perhaps, as in cases otherwise treated. It did not appear that the baths produced any especially favourable effects upon the urinary system. The quantity of urine secreted showed an increase under the hydropathic treatment, the urine being lighter in colour, clearer in quality, yielding a lighter specific gravity.

The effect of the fever upon the muscular system is much less under cold-water than under the ordinary treatment.

Ziemssen found actual degeneration of the muscles in only one of his fatal cases, and his patients made less complaint of muscular pains than is usual. Since a high fever destroys the individual elements of the body, this favourable condition may be attributed to reduced temperature. These observations of

Ziemssen's are the more reliable from the fact that under hydrotherapeutics the intelligence and consciousness of the patient are commonly far better than under the usual treatment of typhoid, hence his statements are oftener obtained and more dependable. The author also observes that when the patient convalesces he possesses more muscular strength after cold-water treatment. Loss of weight is less under the hydropathic treatment and the patient eats more and digests more rapidly and more perfectly than under the old régime.

Finally, Ziemssen claims that it has been fairly enough proven that by means of a systematic use of cold water the mortality in typhoid becomes decidedly lessened. The average death-rate, however, varies in the reports of different writers.

Out of 170 cases Brand lost none. Bartels and Jürgensen lost 5 out of 160 cases, or 3.1 per cent. The previous mortality in their hospital had been 15.4 per cent. Omitting mild cases, their loss under cold-water treatment was 4.9 per cent. Liebermeister and Hagenbach report a mortality of 42 out of 470 cases—8.8 per cent. Their former death-rate was 16.1 per cent. under the common treatment. Ziemssen's own statistics show a mortality of 7.5 per cent. under the cold-water method against 30.2 per cent. (!) by other procedures.

He concludes his interesting monograph as follows: "For the reasons already stated we could not adopt Brand's method of treating typhoid, and it was only when we began the use of the graduated full bath that we became converts to hydrotherapeutics, for this form of treatment appeared not only more agreeable to the patient, but also achieved, with more certainty, the object in view. The experience which we have transcribed in these pages, together with what has been written by our contemporaries, will, we hope, suffice to secure for the cold-water treatment of typhoid a permanent place in the practice of medicine, and impart to physicians the conviction that this form of treatment, if early adopted and systematically used throughout the attack, will yield far better results than any other therapeutics; that, on the other hand, an imperfect and timid use of hydrotherapeutics will exert next to no effect upon the disease. We lay the greatest stress upon the importance of a methodical use of the baths *early* in the attack, and advise trial of the treatment, proper care of course being observed, even in advanced cases, since surprisingly happy results are often thus attained."

The work is written in the full and searching manner of the Germans. The results of the cold-water treatment are evidently presented with great truth and fidelity. Some of the questions require further elucidation, but the book proves beyond a doubt the real efficacy of the treatment which it discusses, and which we earnestly hope may receive a thorough trial in our own hospitals. To the testimony of the book we may add a word in regard to our personal observations of the practice of our honoured friend, Prof. Traube, of Berlin. Traube claims so low a death-rate, under this treatment, as 2 per cent, and during the months in which we visited his wards of the Charité Hospital he confined himself strictly to the use of cold water in all his many cases of typhoid.

Traube is not an enthusiast, but a cool, keen, cautious practitioner and clinician, with a healthful amount of scepticism. His earnest support of the hydropathic treatment of typhoid, and the great benefit which he claims to have derived from its use, afford the strongest evidence in its favour, Traube being one of the most honest teachers in Germany. H. O.

ART. XXIX.—*A Treatise on the Continued Fevers of Great Britain.* By CHARLES MURCHISON, M.D., LL.D., F.R.S., Physician to the London Fever Hospital, etc. etc. Second Edition. 8vo. pp. xx., 729. London: Longmans, Green & Co., 1873.

THIS country as well as Great Britain has been visited during the eleven years that have elapsed since the publication of the first edition of Dr. Murchison's work on the Continued Fevers by several severe epidemics of these diseases, including one of relapsing fever, a disease so little known in this country before the autumn of 1869 that Dr. Flint was able, when reviewing this work in the number of this Journal for July, 1863, to write that "we believe that it is not doing injustice to our brethren to say that very little attention has, as yet, been given in this country to the subject of relapsing fever, so that it would not be very remarkable if cases are not recognized as such." American physicians have become since this was written sufficiently familiar with the phenomena of the disease from actual observation at the bedside, but it is unquestionably largely owing to the admirable description of it given by Dr. Murchison that they were able to recognize it upon its first appearance.

Although the general plan of the work remains unaltered, the present edition is by no means a reprint of the first. There is no part of it which does not bear the evidence of careful revision. Much of it has been entirely rewritten, and notwithstanding that the size of the type has been reduced in places, it has been found necessary to increase the thickness of the volume by the addition of very nearly a hundred pages. The statistical tables in the first edition were based on 6703 cases of continued fever. admitted into the London Fever Hospital during ten years, while those in the present edition are based upon 28,863 cases admitted during twenty-three years, and the deductions drawn from them are, therefore, much more valuable. Of the 44 illustrative cases contained in the first edition, 5 have been expunged and 54 fresh cases added, making a total of 93. In the first edition the subject of the temperature-range in fevers was not discussed. This omission is very fully supplied in the present edition, where the author not only refers to the observations of others, but gives the results of those made by himself, which seem to have been very numerous, for he tells us that in enteric fever alone he has taken the temperature three times daily in several hundreds of cases. We are glad to find that his observations agree in the main with those of Wunderlich and Thierfelder. We observe, however, that he says, when the disease has advanced to ulceration, the course taken by the temperature varies with the severity and duration of the case. In mild cases at this time the morning remission becomes more decided and the daily ascent begins later. At first there may be little difference in the evening rise, so that this may be 4° or 5° or even 9° in excess of the morning temperature, but soon the evening exacerbation also diminishes, and by the end of from six to twelve days, the evening temperature may be normal. During this lengthened defervescence the fever may be truly intermittent, the morning temperature being normal with a rise of several degrees towards evening.

We propose to notice a few of the other changes which we have observed in comparing the two editions. These, as we have already said, are very numerous, for it is evident that the author has endeavoured to incorporate with the results of his own experience those of his fellow-workers, and to make his book fairly representative of the existing state of knowledge as to the pathology, symptoms, and treatment of the continued fevers.

Dr. Murchison adopts Zenker's conclusion as to the changes in the voluntary muscles induced by enteric fever, and says that he has found similar changes in typhus fever and that they are now known to be common in all protracted febrile diseases. In addition to granular and waxy degeneration of the muscles he has also found in typhus fever extensive extravasations of blood in the substance of the rectus abdominis and other muscles independent of any external violence. These extravasations, he says, may soften and form pseudo-abscesses. They are due to rupture of the muscular fibres, not from spasm, as stated by Rokitansky, but from the destruction of the contractile tissue. Recovery, when it does take place, is brought about by the regeneration of the muscles through the enlargement of the existing, and the formation of new primitive bundles.

The author, when discussing the cold-water treatment of fever, says, the observations of Jürgensen, Ziemssen, Liebermeister, Wilson Fox, and others, show that although the practice may not shorten the fever and is often inapplicable, yet, under certain circumstances, it is useful not only for reducing the temperature first of the surface and then of the interior of the body, but for relieving headache and other distressing symptoms, removing congestions of the kidney, warding off delirium and coma, and rousing the nervous system in cases of excessive stupor. Moreover there is reason to believe from the diminution in the excretion of *urea* and *carbonic acid* after the use of cold baths, that they retard the metamorphosis of the tissues. The most favourable results have also been obtained from this treatment; Ziemssen asserting that he has reduced the mortality of enteric fever to three per cent., and taking the results of six different observers the mortality of the same disease was 5.7 per cent. (847 cases, 48 deaths). But the author goes on to say, the more conclusive facts in favour of the cold water treatment are those observed in certain cases of hyperpyrexia by Dr. Wilson Fox and others, where its employment was followed by recovery from an elevation of temperature (110° Fahr.), which under every other method of treatment has been speedily followed by death. The author alludes to the different plans for employing cold in the treatment of pyrexia; such as the cold affusion practised by Currie, packing in a wet sheet resorted to by Brand, or immersion in cold water, which is the method now most in fashion. We believe that a still more efficacious mode of diminishing the temperature of a fever patient, where the symptoms are threatening and there is no time to be lost, is the application of ice directly to the surface of the body. This has been done with great success at the Pennsylvania Hospital in this city in the treatment of sunstroke, a condition in which the temperature is often very high (108° Fahr.) and which under any other treatment usually terminates fatally.

In the present edition of his work Dr. Murchison modifies the opinion which he expressed in the former edition, that quinia, when administered in large doses in the course of the typhus or typhoid fever was either perfectly useless or positively dangerous. "I have made," he states, "many careful observations on the effects of large doses of quinine (10 to 20 grains) in typhus, and I am bound to admit that noises in the ears, temporary acceleration and irregularity of the respiration, and occasional vomiting are the only disagreeable symptoms which I have known to result." After speaking of the effect which it undoubtedly has of causing within an hour or two a fall of the temperature, he says that this effect is transient, and that, although the result may be kept up by repeating the dose, no decided good generally results from such a course, while occasionally delirium and collapse are induced by it. It has, therefore, no power to cut the disease short, no matter at what stage it may be given.

"At the same time," he adds, "from its undoubted power of reducing temperature, one or more large doses of quinine may be useful when the disease is at its crisis, and when the temperature is rising instead of falling. In more than one instance, when given at this stage, I have had reason to think that it was instrumental in saving life." It is a fact of sufficient importance to recall to the memory of our readers that the late Dr. W. W. Gerhard, of this city, thought that the administration of repeated doses of quinia, to the amount of twelve grains in twenty-four hours, was attended by obvious advantages, in the Philadelphia epidemic of typhus in 1836. To this distinguished physician and to Dr. Pennock, also of Philadelphia, is awarded the credit of having first clearly established the most important points of distinction between typhus and enteric fever.

In other respects the author's views of the treatment of the continued fevers seem to have undergone but little change. We find him recommending chloral in twenty grain doses in order to secure sleep in cases where the patients are restless or delirious. This remedy, he says, will often work like a charm, but occasionally it will be necessary to repeat the dose. When opium is given it should be combined with digitalis or antimony, either of which has the power of reducing the fever and of counteracting the tendency of opium to lock up the secretions. He agrees with Dr. Graves in thinking that in many cases belladonna will be found a more valuable remedy than opium.

Dr. Murchison refers to Dr. Harley's recent papers on "The Pathology of Scarlatina, and the Relation between Enteric and Scarlet Fevers" (see *Amer. Journ. Med. Sci.*, April, 1872), and on "Tubercular Fever and its Relation to Enteric Fever" (see *Amer. Journ. Med. Sci.*, Oct. 1873), simply to condemn the views expressed in them. "I have seen," he says, "nothing to justify the opinion held by Dr. J. Harley, that scarlatina and enteric fever are different manifestations of the same poison, or that enteric fever is 'an abdominal scarlatina.'" While admitting that an attack of enteric fever is often followed by tubercular deposit in the lungs, he does not think this justifies the view that the intestinal ulcers of enteric fever are indistinguishable from those of enteric fever.

In the concluding chapter Dr. Murchison gives the results of his extensive experience "on the relative merits of isolating fever patients and of distributing them in the wards of a general hospital." The following are the most important of his conclusions. 1. Cases of enteric fever may be distributed in the wards of a general hospital with impunity. 2. Cases of typhus and of relapsing fever ought never to be treated in a ward with other patients; even in no larger a proportion than one to six. 3. There is no evidence that in a well-ventilated fever hospital the mortality from continued fever is greater than in a general hospital. 4. In proportion to the number of cases of typhus treated, the danger of the disease spreading is much less on the plan of isolation than on that of mixing. 5. In every fever hospital, typhus, relapsing fever, enteric fever, and scarlatina ought to be treated in distinct wards; but there can be no objection to the many cases of acute non-contagious diseases, constantly sent by mistake to fever hospitals, being treated in the same wards with enteric fever. He says, in addition, that the ventilation, which is universally admitted to be necessary for preventing typhus fever spreading in a general ward, is injurious to patients suffering from many diseases, such as nephritis, acute rheumatism, bronchitis, etc., which, moreover predispose them to contract typhus on exposure to the contagion, and to have it in a severe and fatal form. Another advantage of isolation is, that in a fever hospital it will always be possible to obtain a staff of officials seasoned by a previous attack of typhus, or of an age

at which it is not likely to be fatal, which it would be impossible to obtain for general hospitals.

The author still prefers the term pythogenic fever to any other that has been proposed as a designation for the disease generally known as typhoid fever, but in consequence of the adoption of the name enteric fever by the London College of Physicians, he gives it the most prominent position in the present edition of his work. We notice that Dr. Murchison, in common with many other English writers, uses the word tympanitis instead of tympanites in describing the distended condition of the abdomen in the second stage of enteric fever. Tympanitis, according to Dr. Dunglison, signifies inflammation of the tympanum, and this we believe is the meaning generally attached to it in this country.

In addition to the coloured plates and wood-cuts contained in the first edition, eleven new diagrams, showing the temperature-range in typhus, enteric, and relapsing fever, have been introduced. J. H. H.

Art. XXX.—*Transactions of the Medical Society of the State of New York*, for the year 1872. 8vo. pp. iv., 484. Albany, 1873.

The present volume of Transactions contains thirty-nine articles, of which rather more than one-half are devoted to subjects of general professional interest; to these we shall now, in accordance with the custom of this Journal, briefly invite our readers' attention.

The first paper consists of the minutes of the annual meeting, which appears to have been of an unusually harmonious character; at least if wordy warfare prevailed in the sessions of the society, its secretary has wisely concluded not to perpetuate the record of the battles in black and white.

Following the minutes is the anniversary address of the President, Dr. William C. Wey, of Elmira, which has for its subject *Medical Responsibility and Malpractice*. This is a well-written discourse, containing a great deal of useful information and many sound reflections upon the important subjects of which it treats. After indicating the true limits of medical responsibility, as determined both by judicial decisions and by the dictates of common sense, the author points out that while *malpractice* may to a great extent be prevented by giving to medical men generally more thorough instruction in their art, the prevention of *suits for malpractice* demands in addition a more thorough acquaintance with the principles of medical ethics; as Dr. Wey justly remarks:—

"Suits for malpractice would be rare indeed if a client and his attorney were the only elements that enter into their conspiracy of conception, preparation, and management. The assistance of a third party is indispensable to the birth of the monster, and the wicked alliance is made complete by the presence of a member of the medical profession. This must be spoken to our shame and mortification. In all the cases of malpractice that have fallen under my observation, physicians having authority to practice, or men presuming to be physicians under the sanction of loose laws, have been instrumental in urging on the odious prosecution. I will not attempt to analyze the motives of these traitorous men. They are such as would prompt the defamer of character to asperse his neighbour without cause, or the confidential clerk to betray and rob his employer, or the physician who has become the custodian of family

secrets to retail them in the gossip of social life or spread them to the world through the agency of the witness stand."

Indeed, an ignorance of, or at least a disposition to ignore, the just and reasonable rules of medical ethics, seems to us one of the most crying evils of the day. How comparatively few of the medical men of the present generation, we do not say, have read, but are practically familiar with and in their daily walk guide themselves by the code of ethics of the American Medical Association! How many, alas, in the greed for wealth or for personal advancement, forget the dignity and almost sacred character of their profession, and transmute a noble art into a most ignoble trade!

Following Dr. Wey's address, is a short but interesting article on *Mania Transitoria*, by GEORGE COOK, M.D., Resident Physician of Brigham Hall, Canandaigua. This paper is founded on the report of the trial for murder, and acquittal on the ground of temporary insanity, of a young man who shot the seducer and affianced but faithless lover of his sister. Dr. Cook shows that there was not the slightest ground for supposing the prisoner to have been insane, and indeed there can, we think, be no doubt that, the jury having resolved to acquit, the most reasonable, though perhaps not a strictly regular verdict would have been that of the famous Yorkshire jury, viz.: "Sarved her [him] right."

Dr. EDWIN HUTCHINSON, of Utica, New York, contributes the next article, which describes a case of *Malignant Tumour of the Orbit*. The patient was a boy between four and five years of age, and the first growth (which was removed several months before death) was ascertained upon microscopic examination by Dr. Delafield, of New York, to be a recurrent fibroid (Paget), or, we suppose, what it is now more fashionable to call a spindle-celled sarcoma. A second growth made its appearance three weeks after the removal of the first tumour, and, ulceration having occurred, the patient soon perished from exhaustion and hemorrhage. In his remarks upon the peculiarities of the second tumour (which does not appear to have been examined microscopically), the author seems to us to confound the question of clinical character with that of structure; the growth caused death, and was, therefore, no doubt clinically malignant, but we see no reason to suppose that it, more than its predecessor, was of a cancerous nature. Dr. Hutchinson's paper is illustrated with two wood-cuts.

The next paper, by HARVEY JEWETT, M.D., of Canandaigua, gives an account of a fatal *Case of Extra-Uterine Fœtation*. The author recommends that, in case of rupture of a fœtal cyst, gastrotomy should be at once resorted to; this seems to us sufficiently reasonable, but we must demur to his advice to employ the same operation with a view to secure the bleeding vessels in cases of pelvic hæmatocele.

The *Annual Address before the Oneida County Medical Society*, by H. N. PORTER, M.D., gives an interesting historical account of the society before which it was delivered, with reminiscences of several of the early members, but presents no points calling for comment in these pages.

Dr. JAMES S. BAILEY, of Albany, contributes the next article, which is called *Cases illustrating some of the Causes of Death occurring soon after Childbirth*. The author's first case is described as, and reads like, one of embolism of the pulmonary artery, but in the record of the post-mortem examination no mention is made of the state of the vessels, and heart clots appear to have been found in the *left* ventricle only. The remaining cases are examples of

rupture of the womb, post-partum hemorrhage, apoplexy, thrombus vulvæ, placenta prævia—neither this nor the preceding case proved fatal—and rupture of the left ovarian vein.

A paper contributed by J. H. Pooley, M.D., of Yonkers, consists of *Some General Remarks on the Surgery of Childhood.* Dr. Pooley's remarks are quite interesting, and well worth the surgeon's attention. Upon most points his views appear to us perfectly just and reasonable, but we must dissent from his recommendation to habitually employ anæsthetics, and particularly chloroform, as an aid to diagnosis. There are, no doubt, some spoiled children who are otherwise quite unmanageable—the same children who scream and struggle when the doctor offers to feel the pulse, and who bite pieces from the medicine glass when the mother tries to give a dose of physic—but such cases are surely exceptional. From a not inconsiderable experience in the surgery of childhood, we feel justified in declaring that anæsthetics are really seldom required, except in such cases and under such contingencies as would equally indicate their employment in dealing with adults.

The Present State of Electro-Therapeutics is the subject of the next article, contributed by A. D. Rockwell, M.D., of New York. The first portion of this paper, which explains the true signification of the various terms employed by medical electricians, seems to us more satisfactory than the latter part, which is devoted to the therapeutic applications of electricity.

We next come to *Cases in Ophthalmic Practice*, by Charles E. Rider, M.D., of Rochester. Dr. Rider describes two cases of inflammation of the lachrymal gland occurring in the course of mumps, four cases of pannus successfully treated by the inoculation of pus, and a remarkable case in which a foreign body remained buried in the eye for thirty-five years, and at the end of that time was found lodged close to the ciliary body, upon the removal of the injured globe for sympathetic implication of the other eye.

Blepharoplasty is the subject of an interesting paper from the pen of Henry D. Noyes, M.D., of New York. Several cases are narrated, which were either remarkable in themselves or which called for special modifications of the ordinary forms of operation, and the whole paper is worthy of attention from those who are interested in this branch of plastic surgery. Several diagrams are furnished to render more clear the various steps of the operative measures employed.

A Case of Congenital Hypertrophy of the Under Lip, successfully treated by Surgical Operations, is recorded by Gurdon Buck, M.D., Visiting Surgeon to New York Hospital, etc. The first operation consisted in excising a V-shaped portion of the lip, as in the ordinary procedure for the removal of an epithelioma of the part, and the second in excising a transverse strip so as to diminish the thickness of the prolabium. The appearance of the patient before and after treatment is shown in two illustrations which accompany the paper.

The succeeding article is on *The True Object of Medical Legislation;* by Stephen Rogers, M.D., President of the New York Medico-legal Society, etc. Dr. Rogers speaks somewhat in parables, but, as nearly as we can ascertain his meaning, seems to recommend that the Medical Profession should unite with Homœopathic and Eclectic practitioners to suppress quackery by an appeal to law: at the risk of incurring the charge of "fogyism," we must venture to express a doubt whether any good could issue from such an unnatural union as that proposed.

Ovariotomy. Treating the Pedicle without Clamp, Ligature, or Cautery, is the subject of the next paper, which is contributed by Julius F. Miner, M.D.,

of Buffalo. Dr. Miner's very ingenious mode of removing ovarian cysts by enucleation is already familiar to the readers of this Journal from an excellent article furnished by the author to the number for October, 1872 (p. 391).

Dr. C. C. F. GAY, also of Buffalo, undertakes in the next paper a *Defence of Taxis in Strangulated Hernia*. We entirely approve of Dr. Gay's suggestion, that—

"Often it would be wiser, in grasping a hernial tumour for the purpose of its reduction, to pull upon it rather than push upon it; in other words, while making gentle pressure over and around the tumour with the hand, if the tumour be of sufficient size to be grasped by the hand, gently drawing away the contents from the point of stricture, so as to diminish the relative size of the protruding bowel near its exit at the abdominal ring."

But we must add that we hardly can consider this suggestion novel, inasmuch as the practice recommended is taught in the majority of modern surgical text-books. So as regards Dr. Gay's remarks upon the reduction of hernia when the patient is in the erect posture, we think it but right to say that the occasional propriety of resorting to this method is taught both in Prof. Gross's *System of Surgery*, and in the smaller volume of the present reviewer; on the other hand, we beg to say that in no books with which we are familiar is it taught that the patient should be taken "by the legs and dragged across the room with his legs over [the operator's] shoulders, and his head dragging upon the floor" (p. 195); and that we are not at all surprised to learn that Dr. Gay in adopting such a plan has exhausted his strength to no purpose, and has "never in a single instance met with success by this manœuvre."

A *Report of two Cases of Inversion of the Uterus, with Remarks and a Description of the Uterine Repositor*, is contributed by JAMES P. WHITE, M.D., Professor of Obstetrics in the Medical Department of the University of Buffalo. These two cases, which were published in the number of this Journal for April, 1872 (pp. 391–403), are the eighth and ninth in which Prof. White has succeeded in effecting reduction or reposition of an inverted womb, in the manner described by him in the number for July, 1858 (pp. 13–24).

The next article is upon *Venesection*, and is contributed by Dr. A. W. TUPPER, of North Granville. Dr. Tupper lauds the efficacy of bleeding in obstetric practice, and declares that, in a practice of thirty years, he has "never known a single case of convulsion to occur among those who had been bled at the seventh or eighth month of their pregnancy."

In a paper on *Hydrate of Chloral as an Anti-Spasmodic on the Rigid Os Uteri in Parturition*, the author, Dr. SALVATORE CARO, of New York, gives a number of cases in which dilatation of the os uteri has rapidly occurred while the patient was under the influence of the drug in question.

Thoughts on the Causation of Insanity are contributed by Dr. JOHN P. GRAY, Superintendent of the New York State Lunatic Asylum. This is an interesting and suggestive paper, and may be considered as in some respects a sequel to that furnished by the author to the preceding volume of Transactions (see No. of this Journal for April, 1873, p. 508).

Next is a paper on *Chronic Cystitis in the Female*, by THOMAS ADDIS EMMET, M.D., Surgeon to the N. Y. State Woman's Hospital. Dr. Emmet advocates a resort to cystotomy in otherwise intractable cases of inflammation of the bladder, and narrates several cases in which he has performed the operation with decided advantage to his patients. This mode of treatment appears to have been originally suggested by Guthrie, and was first practised in the male subject by Prof. Parker, of New York; from the present paper, and from Dr. Bozeman's

remarks thereon, as recorded in the minutes of the Society's meeting, we infer that a question of priority exists between Dr. Emmet and Dr. B. as to which first resorted to the operation in the case of a female. Upon this question we shall not presume to express any opinion, but shall merely say that both gentlemen claim to have performed the operation in 1861 (Dr. Bozeman in January, and Dr. Emmet in the summer of that year), but that neither appears to have published any account of his operation until quite recently.

Medical Microscopes form the subject of the next paper, which is from the pen of R. H. WARD, M.D., of Troy. The author gives a "Synopsis of Student's Microscopes," and a "Table of Objectives, their Makers and Prices," both of which will no doubt prove useful to those who are about to purchase microscopes but are not familiar with the respective advantages of the various instruments in the market.

Two Cases illustrating the production of Vocal and Consonant Sounds form the subject of the next communication, which is from Prof. E. M. MOORE, M.D., of Rochester. Prof. Moore's conclusions are as follows:—

"1st. That the larynx is not only the generator of voice (so called), but the actual seat of vocalization for the vowels *a*, in all its forms, *i* long, *o* long, and the pure aspirate. Also the short vowels, which are also explosive, as *i* in *sit*, *o* in *not*, and nameless one or urvocal.

"2d. That these sounds receive a finish in the pharynx, nose, and mouth, with the exception of the pure breathing and the short vowels.

"3d. The consonants are all made above the larynx.

"4th. The vowel *e* long is made purely in the front part of the mouth, also the vowel *oo*, and the diphthong *eu*, which is composed of these two elements.

"5th. The short vowels (*e* in *met*) (*i* in *sit*) (*u* in *nut*) (*o* in *not*) can be made in the front part of the mouth.

"6th. The urvocal can probably be made in several places from the larynx to the front of the mouth."

A paper on *Myringectomy, followed by decided Improvement in the Hearing Power, in a case of Adhesion between the Membrana Tympani and the Promontory; also Remarks on the Operation of Paracentesis of the Membrana Tympani in some other conditions*, is furnished by J. S. PROUT, M.D., Surgeon to the Brooklyn Eye and Ear Hospital, etc. Dr. Prout's paper is one of considerable interest, and is worth the attention of practitioners generally as well as of aural surgeons.

The last paper of a strictly scientific character is also the longest, and is upon the subject of *Intussusception*, by STEPHEN ROGERS, M.D., of New York. The author narrates a very interesting case of intussusception occurring in a boy, seven years old, who recovered, without sloughing of the intestine, on the fourth day from that on which the acute symptoms were first manifested, the treatment which proved effective having consisted in (1) the administration of morphia, (2) elevation of the pelvis, (3) the repeated use of enemata of salt water, and (4) manipulation and kneading of the abdomen. Dr. Rogers adds a commentary on the subject of intussusception in general, which displays a great deal of research, and which will prove of great value to future investigators; we can recall indeed at this moment but three recent papers of any importance to which Dr. R. appears not to have referred. These are Dr. Head's interesting article in the third volume of *St. Bartholomew's Hospital Reports*, Prof. Adelmann's, in the Prague *Vierteljahrschrift* for 1863, and M. Duchaussoy's, in the *Mém. de l'Académie de Médecine*, vol. xxiv. An abstract of the first-mentioned paper will be found in the number of this Journal for July, 1868, p. 218, and of the others in the *Year Book* of the New Sydenham Society for

1863, pp. 293–297. We cannot approve of Dr. Rogers's recommendation that laparotomy, or, as it is more commonly though less correctly called, gastrotomy, should be employed in these cases; a valuable resource in some of the acute cases of obstruction met with in adults, it is, in our opinion, an unsuitable operation in those of intussusception, and particularly when occurring in children. Our reasons for this opinion have been set forth elsewhere, and it is sufficient to add here that the only cases in which, according to Dr. Rogers, the operation has been resorted to among children terminated fatally,[1] while he has himself added another to the already numerous cases of recovery under non-operative treatment.

The succeeding articles in the volume before us consist of obituary or biographical notices of Drs. WILLIAM BURR BIBBINS, EDWARD HALL, ANDREW VAN DYCK, CHARLES BARROWS, JOHN HENRY REYNOLDS, MOSES C. HASBROUCK, and ALFRED E. VARNEY, the writers being respectively Drs. ELLSWORTH ELIOT, A. S. CUMMINGS, J. B. MURDOCH, EDWIN HUTCHINSON, R. S. ALLEN, T. BLANCH SMITH, and C. W. HAMLIN.

Finally come the customary lists of honorary and permanent members, members of the various County Medical Societies of New York, etc.

In conclusion, we may fairly congratulate the members of the New York State Medical Society on the prosperity of their association, and on the general excellence of their published transactions. J. A., JR.

ART. XXXI.—*Ozone and Antozone; their History and Nature; When, Where, Why, How, is Ozone Observed in the Atmosphere?* Illustrated with wood engravings, lithographs, and chromo-lithographs. By CORNELIUS B. FOX, M.D. Edin., M.R.C.P. Lond.; Fellow of the British Meteorological Society, of the Obstetrical Society, etc. pp. xvi., 329. London: J. & A. Churchill, 1873.

FOR many years, though after a somewhat intermittent fashion, men have been endeavouring to fathom the mystery hanging about ozone; and any one who wishes to know what is the present state of our knowledge with regard to this potent agent, cannot do better than read the very complete *résumé* of Dr. FOX. It is difficult to do more than sketch an outline of this work, for, itself a review, and a very good one, of the labours and writings of all the prominent investigators of ozone, it is impossible to condense it. Beginning with a short history of ozone and antozone, the latter of which is now believed to be identical with the peroxide of hydrogen, the author passes to the question "What is ozone?" the answer to which is of great interest, as it is of great importance to those interested in questions of hygiene.

Ozone may be described as a gas which possesses all the oxidizing properties of oxygen, but in a higher degree, and which has, moreover, a pungent odor, and is inimical to life. Ozone will at once oxidize substances which oxygen under ordinary circumstances of temperature will not affect. It is believed to differ from oxygen, of which it is a modification, in that its molecule contains three atoms, while that of oxygen contains but two. This, which was

[1] A successful operation in a child has been recently reported by Mr. Hutchinson—*Lancet*, Nov. 15, 1873.

first suggested by Dr. Odling, received what seems to be proof, from experiments of Loret. It appears, from the experiments of Andrews and Tait, that if 100 volumes of oxygen are exposed to the action of electricity, they shrink to about 92 volumes, and about $\frac{1}{12}$ of the oxygen is converted into ozone. If now mercury be exposed to this 92 volumes of ozonized oxygen, the ozone disappears, and yet 92 volumes of oxygen are left. If without the introduction of mercury the ozonized oxygen be heated, the 92 volumes are restored to their original volume—100 volumes, for ozone by heat is converted into ordinary oxygen.

"To render Dr. Odling's theory of ozone intelligible, a knowledge of the accepted theoretical conception amongst chemists of the nature of gases is necessary.

"Every gas consists of excessively minute indivisible particles called *atoms*, which, by their aggregation, form *molecules*. The molecules of all gases, whether elementary or compound, have an equal size, and, at the same temperature and pressure, a given volume contains always the same number of them. . . . The formula of oxygen (molecular formula) being now considered by chemists to be O_2, Dr. Odling thinks that the molecule of ozone contains three atoms of oxygen, and that its formation simply means the condensation of oxygen into two-thirds of its former volume. This theory would represent the formula for ozone as O_3 or O_2O, and would attribute its oxidizing power to the ease with which each molecule loses its third atom of oxygen. According to this view, Andrews' and Taits' results become easily comprehensible. 100 cubic inches of oxygen yield 92 cubic inches of ozonized oxygen, because 8 cubic inches coalesce with 16 cubic inches to form 16 cubic inches of ozone. If the gas is heated, the original volume is restored, because the 16 cubic inches of ozone (O_3) yield 24 cubic inches of oxygen (O_2).

"When the ozone is absorbed by the mercury, it is only the third atom which is combined with the mercury; the 16 cubic inches of ozone, therefore, become 16 cubic inches of oxygen, and the volume remains unaltered. . . . . This beautiful hypothesis, however, must have remained a mere hypothesis, but for the remarkable experimental verification which it has received from the hands of M. Loret. He has discovered that, whereas most substances only remove the third atom of oxygen from ozone, oil of turpentine is capable of removing *the whole molecule*. If the 92 cubic inches of ozonized oxygen are treated with oil of turpentine instead of with mercury, a white cloud is produced, and the residual oxygen is found to occupy a volume of only 76 cubic inches. The only possible explanation here is, that the 92 cubic inches consisted of 16 of ozone (O_3), and 76 of unaltered oxygen (O_2), and that the former was seized upon entire and removed in the solid form by the oil of turpentine."

This is certainly a most beautiful proof of a very ingenious theory, and it is worthy of remark that, as Dr. Fox says later, "if the differences between ozone and its parent oxygen are great, they are not more if so striking, as are those between the three allotropic modifications of carbon, viz., lampblack, graphite or plumbago, and the diamond" with which we are familiar.

It must not be supposed that Dr. Fox at all passes over any of the opinions which have been expressed with regard to the nature of ozone. All those of any importance he has presented, and, indeed, throughout the work this plan has been almost too fully carried out. It is not unfrequently difficult to eliminate what has been disproved from the results of the most recent investigation.

The author next describes the more common forms of apparatus for the production of ozone, all of which depend upon the action of electricity, and then devotes some pages to the consideration of antozone, which is believed, as has been said, to be indentical with the peroxide of hydrogen. Next we find the question "Does the atmosphere contain ozone?" This is answered in the affirmative. So much electrical disturbance is constantly occurring, as are

also slow oxidation and other factors of ozone, that these taken with the fact that there is something in the atmosphere which affects tests as ozone does, would give us great reason for belief in its presence there. In addition, Houzeau, whose work for a while was neglected, but has recently been confirmed, has shown that nothing but ozone can affect one of the tests as this atmospheric agent does.

The atmosphere does contain peroxide of hydrogen, which was for awhile believed to be antozone, or another allotropic state of oxygen. This is the next point mentioned.

We now come to the "When, Where, Why, How?" which have so prominent a place in the title.

Each of these is subdivided, and we get "When has ozone been observed in the atmosphere?" and "When should ozone be observed?" etc., and so for the Where, How, and Why? a peculiar arrangement, but one which perhaps answers the author's purpose of a detailed treatment of the subject.

Ozone appears to be constantly present in all pure air. It is not found when the air is foul, and this is probably because it is consumed as fast as it is produced. It is found in larger quantity during the winter and spring months than in the summer and autumn—by night than in the daytime.

It should be observed constantly, as the variation in amount from hour to hour is great.

Where.—It is observed on the weather side of cities, little being observed on the side to which the wind is blowing. It is rarely found in cities, probably on account of the immense quantity of oxidizable material to be met in them and the air of the streets. It is especially abundant in the air fresh from the sea; for the ocean is a great ozone maker. The atmosphere of the pine forests has also more than its share. In this connection it is not uninteresting to notice that many dried herbs, as well as certain substances used as perfumes, millefleurs, for example, produce ozone, and it may be that the good effect thought to be produced by the placing of dried herbs between the prisoners' dock and the court, and by lavender among linen, was more real than we have imagined, and due to ozone.

It *should* be observed everywhere, so as to add to our information on the subject, which though extensive is vague.

Why.—In order to settle the question as to the part played by ozone, it has been and should be looked for and observed when found. There seems little doubt that we have in it a most valuable means for the destruction of much that is recognized as deleterious to man. We cannot as yet say whether or no there is any connection between the rise and fall of certain epidemics and the increase and decrease in the amount of ozone in the atmosphere. Observers differ. Some report an increase in the amount of ozone at the very time that epidemics were gaining strength. Others have obtained opposite results. Many are disposed to attribute epidemics of influenza to an excess of ozone. With regard to all this we need many more, and very careful, observations, and much time and labour must be spent before any conclusion at all satisfactory can be arrived at.

Ozone certainly is a powerful oxidizer. This much we know, and all deleterious matter which becomes innoxious when oxidized must yield to it; but for a knowledge of the rest we must wait and work.

Dr. Fox passes in review the so-called *practical* uses of ozone, such as bleaching, in order that as many labourers as possible may be called into the field; a very cheap way of making ozone being among the desiderata.

That portion of the work headed "How" takes up nearly half the book, and is important.

The means necessary to the proper recording of the amount of ozone in the atmosphere are a test and a receptacle for it, called usually an "ozone box."

The box should be so contrived that while free access of air is allowed rain is excluded, and the force of the wind somewhat moderated before it reaches the interior. In fact, where circumstances allow of it, it is best to draw a known amount of air through the box containing the test at a known rate by means of an aspirator—a convenient form of the latter being a modification of Bunsen's filter pump.

As tests various substances have been employed—most commonly, however, iodide of potassium, alone or in combination, has been used, as this salt is readily decomposed by ozone.

Schœnbein used a test containing iodide of potassium and starch which gave a blue colour of an intensity corresponding to the amount of iodine liberated when the ozone attacked the potassium. For various reasons, however, this test has been given up by many observers, and the two recommended by Dr. Fox are: the iodized litmus test and the iodide of potassium test. In the first of these, Houzeau's, which is composed of slightly reddened litmus and iodide of potassium, the ozone attacks the iodide, liberating the potassium, which, as potash, turns the red litmus blue, more or less, according to the intensity of the action. In the other the ozone liberates the iodine, which may either remain free or form iodate of potassium with the ozone and the potassium, which it has just left. In this latter case the iodine colour, on which the test depends, does not make its appearance until the surface of the test paper has been sprayed with a solution of tartaric acid, which, liberating both iodic and hydriodic acids, causes them to react with one another and the iodine to make its appearance.

Both these tests are exposed to the atmosphere on the surface of slips of paper, and for this purpose Swedish filtering paper of good quality has been found by Dr. Fox to be the best.

It is of the greatest importance that the iodide of potassium should be chemically pure, and the test papers should be freshly prepared as often as possible.

Dr. Fox concludes by making the following suggestions:—

"The prevention of disease being *the* great end and aim of the medical art, how important is it that *savants* should fully investigate the amount and functions in the air of these active agents. A thoroughly accurate estimation of the amount of ozone present in the pure air of different climates, and, during the various atmospheric conditions of each climate, should first be obtained. Being possessed of this information we shall be in a position to attempt an elucidation of the following and many other questions which are of immense interest and importance to the human race:—

"1. What are *all* the sources of atmospheric ozone?

"2. How is it formed, and in what circumstances does it arise?

"3. What is its precise action on animals and plants?

"4. Has an excess or deficiency of ozone any effect on the public health?

"5. If so, what is the nature of that influence?

"6. What is the effect of the presence of epidemics on its amount as calculated by the improved ozonometric method?

"7. Does ozone oxidize one only or all of the different kinds of organic matter found in the air?"

This is a formidable array of questions, but the information asked for is of undoubted value. We trust that Dr. Fox's exertion in the direction of improved methods may reap its reward in an increase of the number of observers and of accuracy in their observations.

H. B. H.

ART. XXXII.—*A Treatise on the Pneumatic Aspiration of Morbid Fluids; a Medico-Chirurgical Method of Diagnosis and Treatment of Cysts and Abscesses of the Liver, Strangulated Hernia, Retention of Urine, Pericarditis, Pleurisy, Hydrarthrosis, etc.* By Dr. GEORGES DIEULAFOY, Gold Medallist of the Hospitals of Paris. 8vo. pp. xvi., 394. Philadelphia: J. B. Lippincott & Co., 1873.

THE first word in Dr. Dieulafoy's book gives the key-note of the whole production: this word is the shortest in the English language; it contains but a single letter; it is "I." A more egotistical work than that of the author we have never had occasion to read. Aspiration, he assures us, is a method entirely French, and was totally unknown until November 2d, 1869, when his first communication was made to the Academy of Medicine. The chief peculiarities of Dr. Dieulafoy's method, and those in which, according to its author, its great originality consists, are, "(1) the use of extremely fine hollow needles; (2) the creation of a previous vacuum." As to the first point, no American surgeon will require to be told that the innocuousness of punctures with very fine tubes was established, and the use of such tubes for the evacuation of morbid fluids recommended, long before Dr. Dieulafoy's epoch, by our fellow-countryman Dr. Bowditch, of Boston, whose name, by the way, does not once appear in Dr. Dieulafoy's work. As regards "the use of extremely fine hollow needles," the difference between aspiration and Dr. Bowditch's mode of performing paracentesis seems to us merely one of degree. The last-named gentleman employs a very fine trocar and canula, while the author of the book now before us uses a delicate canula, without the trocar, the extremity of the canula itself being bevelled and sharp-pointed, like the tube of a hypodermic syringe. The only respect then in which we can acknowledge the justice of Dr. Dieulafoy's claim to originality is in his employment of what he delights in calling the "previous vacuum"—which is, in plain words, that he draws up the piston of his suction pump so as to create a vacuum in its barrel before introducing the canula, instead of first introducing the canula and applying the suction force afterwards. This is certainly an ingenious mode of applying the instrument, and, we are willing to believe, an improvement upon the common method; but, we confess, it seems to us a small matter to be set forth in a book of four hundred pages.

That we may not do the author injustice, we quote his description of the operation of aspiration—a description which is repeated in almost the same words in seven or eight separate parts of the volume. Having made sure that the needle or canula is pervious, by passing through it a silver wire and a jet of water, Dr. Dieulafoy, in dealing, for instance, with a distended bladder, proceeds as follows:—

"The aspirator being ready, that is to say, the previous vacuum being made, the needle is introduced sharply at the spot pointed out. Before the needle has penetrated a centimetre into the tissue, that is, as soon as its opening is no longer in contact with the external air, the stopcock connected with the needle is opened, and the vacuum is thus formed in the needle itself. This needle, carrying the vacuum with it, is slowly, very slowly, pushed in the direction of the bladder, until the urine flowing over the glass index shows that the bladder is pierced. Owing to this proceeding, and having the previous vacuum at our command, we know the precise moment the fluid is reached."

The numerous clinical histories with which the author intersperses his remarks are narrated with unnecessary detail, and thus have the effect of making

his pages monotonous; indeed, diffuseness and repetition are faults which characterize the whole of Dr. Dieulafoy's volume.

What position "pneumatic aspiration" may occupy in the estimation of practical surgeons when the charm of novelty has passed away, we are unable to decide. For ourselves, while we feel that Dr. Dieulafoy has introduced a real improvement in the treatment of one or two affections—pericardial effusion and obstinate retention of urine, for instance—yet we cannot but regard his invention as one of much less importance than he and his friends evidently consider it. Moreover, we do not think that Dr. Dieulafoy will find that his volume will advance the cause of "aspiration" with judicious readers. He would, we think, have done better to present his views of the "previous vacuum," with a short account of what it actually has accomplished—not of what he fondly imagines it may accomplish—in a more condensed and more modest form.

J. A., JR.

ART. XXXIII.—*Lectures on Dermatology, delivered in the Royal College of Surgeons of England in* 1871, 1872, 1873. *Including Eczema, Scabies, Urticaria, Herpes, Furunculus, Dermato-Syphilis, Elephantiasis, and Lepra.* By ERASMUS WILSON, F.R.S., F.R.C.S., Member of Council, and Professor of Dermatology. 8vo. pp. xi., 295. London: J. & A. Churchill, 1873.

THE chair of dermatology in the Royal College of Surgeons was founded in 1869, and the author of these lectures was selected as its first occupant. During the following year the first course of lectures was delivered, embracing a general summary or synopsis of the subject. These lectures were subsequently published in the *Medical Times and Gazette*, and later in book form. Through the generosity of Mr. Erasmus Wilson, the Royal College of Surgeons has become the possessor of a most extensive and valuable collection of models of skin disease, most of which are duplicates of those in the Saint Louis Hospital Museum, the work of the artist M. Baretta. In number they exceed five hundred, and are without exception very accurate representations of disease. They form the second largest and most valuable collection of the kind in the world. A very large number of duplicates of these same models have already found their way into our country, and are in the possession of Dr. Wigglesworth, of Boston, a gentleman well known for his interest in all that pertains to the science of dermatology.

It was with a view of presenting these models to the profession that Mr. Wilson inaugurated the course of lectures we are considering, and they may be regarded as a demonstration of the collection with remarks, resembling in some respects clinical lectures. The volume before us comprises three courses of lectures, delivered during a period of three years, and embraces but a limited number of the diseases of the skin; so that, if the same amount of time and attention be devoted to the remaining models of the collection, we cannot hope for the completion of the task for some years to come.

With reference to Mr. Wilson's classification of cutaneous diseases, to which our attention is once more invited, the present occasion does not permit us to speak at length. It is, however, in the words of the author, "a clinical classification;" that is, a system based upon his own views of the clinical relationship of the various diseases with but little or no concern for their pathological characteristics. In a word, it is a classification peculiarly original, and the simple and captivating appearance which it at first presents is at once dis-

pelled by the confusion in which we find certain dissimilar diseases, and which we think must necessarily follow any purely clinical classification of skin diseases. But to refer to the subject matter, we find eczema receiving its due share of space and time—one whole course of lectures being devoted to the "eczematous affections" of our author. Concerning eczema, Mr. Wilson remarks that if called upon to define the disease briefly, he would term it "an inflammation of the skin attended with a breach of its surface."

As many are already familiar with the views of our author upon eczema, it will scarcely be necessary to enter here into details; we observe nothing new in the general views entertained, or in the treatment. With the name eczema exfoliativum, Wilson describes and considers the pityriasis rubra of Devergie and Hebra; this introduction we notice with pleasure, for it has always seemed to us as though this affection must, sooner or later, find its proper place with the eczemas. We confess to being at a loss to state to our readers the relationship between eczema papulosum and lichen simplex, for our author will have them different diseases. A distinction is drawn between them which appears by no means clear. Upon another page, however, we find the following clear and concise statement, which, in our estimation, is solid doctrine, worthy of inculcation. "Eczema is a simple inflammation of the skin; and the varied manifestations which it is apt to present are due to peculiarity of structure of the integument on the one hand, and to peculiarities of constitution of the individual and duration of the disease on the other."

The erythemata are rapidly passed over, a few words sufficing for each of the forms. Urticaria, likewise, receives but a few pages. Under "phlyctenous affections" we have pemphigus and herpes; then follow "furunculous" and "syphilous" affections.

We now come to the lectures for the session 1873, which embrace but two diseases, elephantiasis Græcorum and lepra Græcorum, as they are respectively designated by our author. Elephantiasis Græcorum (leprosy in English) is a disease with well-defined characters, about which there can exist no confusion, so long as this term is employed; its meaning is the same in all countries, and hence it is most proper to retain it. Not so, however, with the term "lepra Græcorum," as Mr. Wilson styles psoriasis. This new nomenclature is now, for the first time, bestowed upon this well-known disease, which, by universal consent, is called psoriasis. It is known everywhere by that name, and is so termed by all other writers of the present day. In the last edition of his work upon skin diseases our author names this same affection "alphos;" now it is changed to "lepra Græcorum." Why this change? No valid or sufficient reason is given. We cannot but think Mr. Wilson does dermatology a great injury, when, with every new edition of his writings, he changes his nomenclature. This constant changing of our terms, and their significations, is of serious detriment to dermatology, for it shows too plainly the unsettled state of certain minds, which should be in accord upon such important points. L. A. D.

ART. XXXIV.—*A Manual of Midwifery, including the Pathology of Pregnancy and the Puerperal State.* By Dr. KARL SCHROEDER, Professor of Midwifery in the University of Erlangen. Translated into English from the third German edition, by CHAS. B. CARTER, M.D., etc. With 26 engravings on wood. 8vo., pp. 388. New York: D. Appleton & Co., 1873.

IN a somewhat extended review of the original edition of this book we have already expressed our admiration at the thorough and critical manner in which

the physiology of every step in the process of parturition has been again studied and developed, as the only basis of a scientific system of midwifery. Everywhere throughout Germany the work has been adopted not only as the text-book in the universities, but also among scientific men as the most trustworthy exponent of the various indications for operative interference. It has placed obstetrics on the same plane as the sister branches of medicine, inasmuch as a full and intelligent use has been made of the great principles which underlie all pathological processes, so that, for the first time freed from the trammels of a special pathology, a broader, freer, truer method of investigation is indicated; the need of further study and observation on special points is pointed out on every page, while a full recital of the labours of others and a complete list of the foreign literature of the subject guard against that most discouraging of events, viz., the discovery that laborious, patient, and to the best of our knowledge and belief original, work has already been as well done, nay oftentimes better done, by other workers in the field.

It was especially desirable that á book so valuable as this, not only for what it actually contains, but for the stimulus which it will give to original work, should be well translated into English. This was no easy task, for the style, although clear and precise, is, nevertheless, exceedingly condensed and idiomatic, and an English translation which should preserve this conciseness in description, and yet avoid that unpleasant strangeness of expression and arrangement of words which constantly diverts the mind from the apprehension of the matter to a consideration of the style, would indeed have been a triumph. Realizing this difficulty, and grateful to the translator for the work he has done, we are inclined to judge favourably this English version; but in truth it is no easy task to study ten consecutive pages of this work, and although the original is thoroughly familiar to us, owing to almost daily reference, it is with difficulty that we can understand portions of the translation. It is unpleasant to deal in general expressions of dissatisfaction, but it would be still more useless to select a half dozen sentences to illustrate faults in style, and errors of translation. But even in this form no other text-book can supply the place of this work, and as individual cases of interest on special subjects of study and investigation present themselves, it is to this book that we must turn for the most truthful and comprehensive exposition of the present state of our knowledge on this subject.

W. F. J.

ART. XXXV.—*A Manual of Medical Jurisprudence.* By ALFRED SWAINE TAYLOR, M.D., F.R.S., Professor of Medical Jurisprudence and Chemistry in Guy's Hospital. Seventh American edition, revised from the author's latest notes, and edited, with additional notes and references, by JOHN J. REESE, M.D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania. 8vo. pp. 789. Philadelphia: Henry C. Lea, 1873.

THIS standard work is so well known to the profession from its former editions, that the present one needs but a passing notice. That it is a work of value cannot be doubted when we remember that Dr. Taylor has been long known as the leading authority upon medico-legal questions in Great Britain, while the fact of its having reached a seventh edition here shows the estimation in which it is held in this country. The successive American editors have each added valuable notes, and the material introduced by Dr. Reese covers one hundred pages.

From the necessity of keeping down the size of the volume most of the cases have been omitted, and the result has been a corresponding reduction of interest. We think a better plan would have been to draw the pen with unsparing hand through a portion of the theoretical part, much of which is redundant, while some of it is antiquated. The great work of Casper contains upwards of five hundred detailed cases illustrative of the theory advanced, which is itself reduced to a minimum, yet the entire work, as issued by the New Sydenham Society, does not have a much greater bulk than the book before us. We do not wish to find fault unjustly with the method of Dr. Taylor, yet we cannot but think that in yielding to the popular demand for abridgments, vade mecums, and manuals, all of which species are generally more profitable to book makers than book readers, he has produced a book which is too large for ready reference and too small to contain full information upon any one subject.

The first chapters upon Medical Evidence are most valuable, and in every sense worthy of careful study by any one who expects to enter the witness box to testify concerning medical matters, while, as Dr. Taylor points out, no physician can feel sure that such will not be the case with himself.

The subject of Poisoning is considered in eighteen chapters, extending over one hundred and eighty pages, which comprise the cream of the volume, the subject being brought up to the present time and bearing the marks of extended personal observation, though there is not that prominence given to physiological tests we had expected to find. The two grand divisions of the subject are into Irritant and Neurotic poisons. The style is clear and condensed, so that altogether this section fully realizes our ideal of what a manual of toxicology should be.

The subject of Wounds and Injuries occupies fourteen chapters, which we have read attentively, and purpose to notice in some detail.

The subject of Ecchymoses receives most unsatisfactory treatment, no distinct reference being made to Casper's rule that we should establish our diagnosis by incisions, which will certainly reveal any effusion of blood that may be present. We cannot but look upon it as a mistake to reprint, in one edition after another, old and exploded tests, such as that of Barreul, who proposed to diagnose the existence and nature of blood stains by the odour evolved when the suspected spot was subjected to certain chemical reagents, which might do very well had we a standard nose to call upon, or could we subpœna a bloodhound as an expert.

In Chapter XXVII., where the duties of a medical witness are considered, we are treated to a good deal of law and but little medicine. We regard it as unnecessary to give lectures upon the duties of a doctor in a work of this kind, he must treat the case *secundum artem*, and be prepared to tell the jury that he made his diagnosis and treated the case as a doctor, not as a lawyer. Casper has wisely cautioned against any mixture of the two professions.

The direct causes of death from wounds are stated to be hemorrhage, mechanical injury to a vital organ, and shock. Under the first head we are told that unless we use circumspection in treating wounds of the throat, we may be charged with malpractice—of course we may, and justly too, if we do not practise good surgery. We are next informed how we may decide death to have resulted from hemorrhage, and are told almost everything which relates to the subject, yet sufficient importance is not given to the exsanguine appearance of the internal organs revealed upon post-mortem examination. In Chapter XXXI. we find the same errors repeated, it being heavily weighted with much misplaced, and in some cases antiquated surgery, of which we do not see the use in a work on forensic medicine. It would seem sufficient to remind the physi-

cian that when called to attend a case involving a legal inquiry it is of especial importance to make a *correct* diagnosis and to be able to state the reasons upon which the opinion and treatment were based. We will cite one instance in justification of our criticism. Dr. Taylor says that inflammation is apt to follow concussion of the brain, and liable to ensue upon slight lacerations of its substance. Now late authorities think that most cases of severe concussion depend upon lacerations, and that inflammation may follow such injuries is true beyond peradventure, but the surgeon who first learns this fact from a work on judicial medicine is not an expert fitted to give surgical information to a jury. Again, we are taught to discriminate between traumatic injury to the brain and intoxication, which we opine to be quite a needless caution—for what on earth is a physician called for but to find out what is the matter with the patient, simply to make a correct diagnosis and institute rational treatment?

The paragraph (p. 332) which speaks of the medical responsibility incurred in the administration of an anæsthetic, is at least a suggestive one. No lawyer, so far as we know, has explored the subject of deaths from chloroform; but when a case occurs where death has followed the administration of that agent, given for an operation rendered necessary by a criminal injury, we may expect that the statistics of the death-rate attending its use, so far heaped up in vain, will be utilized.

On page 348 Dr. Reese refers to the famous case reported by Dr. Bigelow in the number of this Journal for July, 1850, where an iron bar passed through the left anterior lobe of the cerebrum. As a matter of surgical interest we will state that in conversation with Dr. Williams, now of the Baldwin Locomotive Works, who saw the patient immediately after the injury, we were informed that though the man recovered physically, his mental characteristics were entirely altered afterwards, irritability of temper manifesting itself, and continuing to increase until the time of his death in South America some years afterward, with brain symptoms. Rupture of the heart is spoken of at some length on page 354, and numerous cases are quoted, but no mention is made of Dr. Lidell's paper on internal aneurisms in this Journal for January, 1867, which is a very valuable contribution to the literature of this subject. The chapters upon gunshot wounds contain several statements which can hardly be admitted without qualification, as, for instance, where coagulation of the blood is said to occur only during life, in direct opposition to many cases cited by Casper.

Apart from the chapters upon poisoning we regard those upon asphyxia, especially the ones which treat of drowning, strangulation, and hanging, as the best in the book, while the one devoted to death from lightning, though of little importance in a medico-legal sense, is possessed of much intrinsic value and is of great interest. Pregnancy and allied topics receive but very meagre and insufficient notice in three chapters, but infanticide is presented to the reader at considerable length and details are given with a minuteness and precision in proportion to the importance of the subject. While the docimasia pulmonalis and the hydrostatic test especially are admitted to have attendant *theoretical* difficulties, their *practical* value is proved to be incontestible, and it is shown conclusively that to elucidate the ofttimes difficult questions which present themselves in this connection, no other tests, at present known, can compare in value with those derived from the lungs. Indeed most of the difficulties propounded have resulted from the tortured brains of theorists rather than from the intricacies of actual practice. Many of the chapters of this division terminate with recapitulatory abstracts of the conclusions arrived at in them, a

method of writing which deserves the highest commendation, especially in a book intended for use as a manual. On page 558, in answering objections frequently urged against the value of the hydrostatic test—that in some rare cases the lungs do not float even when the child is known to have been born alive—Dr. Taylor very justly remarks, that, as the failure to find poison in a case where it was known to exist would have nothing to do with those cases in which it *was* found, so in an individual case, should the lungs float, there could be no reasonable doubt that that child had breathed, even though a dozen other cases were cited in which, from the existence of atelectasis, respiration had not been established. That we should not rely solely upon the buoyancy of the lungs appears to us to be clearly shown by Dr. Hicks's case quoted on page 570; but we should call to our aid, as well, the information to be derived from the colour of the lungs, upon which Casper, Guy, and others strongly insist. The famous case reported by Dr. Hicks was one where air had been artificially introduced and could not be expelled by pressure, yet, though the lungs floated, they were entirely wanting in the colour of normal organs. When speaking of *vagitus uterinus*, Dr. Taylor does not point out with sufficient distinctness the fact that all the undoubted cases, and they are very few, occurred in assisted labours, and such cases, not coming before the medical-jurist in this connection, can have no bearing upon the value of the hydrostatic test.

Birth and Inheritancy are treated in three chapters; Impotence and Sterility are included in one, while the whole subject of Rape is compressed into two. Insanity is considered in about one hundred pages, and in them will be found all that the general practitioner cares to know. The existence of moral insanity is not admitted, and in this we believe our author is in accord with the soundest psychology. The concluding chapter upon Life Insurance is one of much value, containing several interesting cases illustrative of a subject to which the experience of the criminal courts is adding from day to day instances of the most appalling blackness, which well show how the love of money is indeed a root capable of bearing the most diabolical fruit.

We know of no critical canon by which a work of this kind can be satisfactorily estimated—each reader has his individual tastes, to which, however, he cannot expect others always to conform. We have indicated some points where we have been obliged to differ from the distinguished author of this volume, and we have felt great diffidence in so doing, yet many will, doubtless, find in it all they desire. Nor do we deem it altogether right to hold Dr. Taylor responsible for a volume of which no edition has been issued by him since 1866, as he would no doubt wish to be judged by his larger and more complete work, of which the second edition has just appeared, and which we propose to notice in our next number.

The American editor, himself a high authority, has done perhaps all that could be done with the book, short of rewriting it, and has accomplished much towards bringing it up to the present time. As was expected, most of Dr. Reese's additions are found in the chapters upon poisoning, and merit the most favourable criticism, being clear and forcible in the highest degree.

The volume presents a handsome appearance, being enriched with quite numerous illustrations, while the paper and typography are all that can be desired.

S. A.

ART. XXXVI.—*A Treatise on the Diseases of the Eye.* By J. SOELBERG WELLS, F.R.C.S., Doctor of Medicine of Univer. of Edinb., Prof. of Ophthalmology in King's Coll. Lond., etc. Second American, from the third English edition, with additions. Illustrated with 248 engravings on wood, and six coloured plates, together with selections from the test-types of Prof. E. Jaeger and Dr. H. Snellen. Philadelphia: Henry C. Lea, 1873.

Treatise on the Diseases of the Eye, including the Anatomy of the Organ. By Dr. CARL STELLWAG (Von Carion), Prof. of Ophthalmology in the Imp. Royal Univ. of Vienna. Translated from the fourth German ed., and edited by D. B. St. JOHN ROOSA, M.D., CHARLES S. BULL, M.D., and CHARLES E. HACKLEY, M.D. Fourth revised and enlarged edition. Illustrated by wood-engravings and chromo-lithographs. New York: William Wood & Co., 1873.

THESE standard works on the eye have received a careful revision both at the hands of their authors and their American editors, and for the most part give a fair *résumé* of the present state of our knowledge in this department of medicine. As might be expected, the style of the respective authors remains unchanged in their new editions, and the clear, straightforward, and unaffected writing of Mr. Wells stands out in strong relief when contrasted with the involved and obscure sentences of Stellwag. One might suppose that this was the fault of the translators, but, on comparing their work with the original, it is quite apparent that in most instances they have rendered full justice to the latter. We are told in the first four lines of Stellwag that "the object of all treatment is to give as favourable direction as possible to the nutrition," and that "in order to properly fulfil this indication, it is necessary in the first place to thoroughly understand the circulation and innervation of the eyeball." To refresh our ideas on the latter subject, and obtain the newest views on it, we turned with some interest to the latter part of the same chapter, and looked under the heading, Mydriatics (page 32), hoping to obtain some useful information as to the employment of those important agents in affections of the eye. The author has in his last edition very much extended his remarks on this important subject, but has by so doing by no means increased the perspicuity of what was already an exceedingly obscure section.

"These effects [mydriasis and impairment of the accommodation] are, generally speaking, either the expression of a weakening or paralysis of the intra-ocular muscles, supplied by the third pair of nerves, or very probably the evidence of a direct excitement of those inner muscles of the eye which receive their nerve supplies from the cervical portion of the sympathetic." (Our author gives no hint as to which of the two, in his mind evidently contradictory, hypotheses, he considers most probable, and that mydriatics may paralyze the third pair of nerves, and at the same time stimulate the sympathetic, has apparently never occurred to him; but to continue.) "Indeed, mydriatics enlarge the pupil to the maximum where conduction is completely interrupted in the third and fourth nerves, in fact in all the cerebral nerves passing to the orbit." (Why not?) "These contractions" (what contractions?) "are also more powerful than those which can be excited in a normal state by external irritation," (of what?), "which state of things may be with some certainty referred to the radiate fibres of the iris."

Can the force of vagueness go further? Has our author any definite ideas as to the anatomy of the eye and its innervation, or does he hold, with Talleyrand, that "the use of language is to conceal thought." The remaining five pages devoted to this subject exhibit other equally obscure passages, and may be taken as a fair example of many similar ones throughout the book—passages with a great show of learning, and but little logic or individual expression of

opinion; in short, where we have "but one-half pennyworth of bread to this intolerable deal of sack."

They, of course, constitute great blemishes in what is often an instructive and always an erudite book.

Although by no means a novelty, perhaps no subject in the whole range of eye-surgery has of late years excited more discussion than the various methods of operating for cataract, the after-treatment, and the percentage of good results. As regards the comparative merits of the flap extraction and of the peripheric linear method, Wells holds that the former is easier, and although he avoids definitely saying so, evidently regards the latter as the best operative procedure when the surgeon has acquired sufficient skill. Stellwag regards the "old flap operation as really far better than its present reputation," and states that those will always prefer it who dare risk a few absolute failures in the attempt to attain a perfect result: while those who disregard the greater difficulty and duration of the operation, and strive to obtain the largest possible number of medium successes will choose the peripheric linear method. He also quotes Reuss and Woinow to show that there is less astigmatism after the latter operation than occurs after the flap extraction. Wells states that after the former the confinement to bed is much shorter, and that the patient requires far less watching and attendance. We fully agree in this estimate, and to our mind it constitutes the strongest claim of Gräfe's operation to superiority over the old flap method.

Both authors very properly condemn reclination or couching. As regards the suction method for soft cataracts, Wells states that it has met favour at Moorfields, and Stellwag defines it as "linear extraction with artificial hindrances." Neither author makes mention of Liebreich's operation, but in both instances the American editors have given a description of the operation, without further remark. Wells abstains from the use of chloroform in flap operations on account of the danger of vomiting. Stellwag never resorts to anæsthesia except in cases of children or exceedingly nervous patients.

As regards the connection of the so-called "choked disk," with intracranial disease, Stellwag considers that it is generally found "under conditions which do not admit of the hypothesis of a direct connection between the primary affection and that of the eye;" that the orbital portion of the nerve in manifest descending neuritis is either uninvolved or only very slightly affected; that "it is evident that under such circumstances there can be no question of a propagation of inflammation by contiguity of tissue, and that here nervous influences, particularly of a vaso-motor nature, must rather come into play." Both authors hold, that, since Sesemann has proved that the central retinal vein, although emptying directly into the cavernous sinus, has yet anastomoses with the superior and inferior ophthalmic veins, the hypothesis that choked disk is caused by obstruction to the return blood, from increased intracranial pressure, must be abandoned. Wells, however, gives great prominence to the researches of Schwalbe, Schmidt, and Manz, which demonstrate a communication between the arachnoid space and that between the two sheaths of the optic nerve, and further, that injections into the first-named cavity thus find their way into the network of lymphatics ramifying with the lamina cribrosa, thus showing how intracranial pressure may act directly on the intraocular end of the optic nerve; while Stellwag thinks that "the circumstance that the so-called choked disk appears relatively but rarely in marked increase of the intracranial pressure, and, on the other hand, is met with in a perfectly normal state of the latter is, however, unfavourable for the above view." Wells also refers at some length to Benedict's theory, and to Leber's endorse-

ment of it. Selections from the test-types of Jaeger and Snellen are appended to both books, and in both, those of Jaeger do not correspond with the original. In it the capitals of No. 1 measure $\frac{3}{4}$ mm., and the m's, n's, v's, etc. $\frac{1}{2}$ mm. In the American editions the capitals measure 1 mm., and the m's, n's, etc., $\frac{3}{4}$ mm. Consequently while the Jaeger No. 1 of the Vienna press can be read fluently by a normal eye at 14″, that of the American copies can be read with equal fluency at 18″. The plates in Stellwag, although bearing the imprint of the German publisher, are inferior to those in the third German edition, and on opening those appended to Wells we find what purports to be a normal eye-ground with a large *arterial* sinus at the inner border of the disk, encircling one-half of it, anastomosing with two arterial twigs given off from one of the superior branches of the central artery of the retina, and finally terminating above in an arterial twig running outwards above the macula lutea. Entirely unfamiliar with any such distribution of the intraocular bloodvessels, we turned to Liebreich's atlas to see whether he gave it the weight of his authority, but failed to find either in the German or English edition of his atlas any such caricature of the circulation in a normal eye-ground. W. F. N.

ART. XXXVII.—*Chemistry, Inorganic and Organic; with Experiments.* By CHARLES LOUDON BLOXAM, Professor of Chemistry in King's College, London, in the Royal Military Academy, Woolwich, and in the Department of Artillery Studies, Woolwich. With two hundred and ninety-five illustrations. From the second and revised English edition. 8vo. pp. 700. Philadelphia: Henry C. Lea, 1873.

IN this edition of his Chemistry, Professor Bloxam has adopted the atomic system of notation, the use of which has become so general in the past few years, and, though he is of opinion that the change adds materially to the difficulty of teaching chemistry with ease and profit to the student, it can be safely said that he has satisfactorily overcome the difficulty.

One advantage of the work is that it combines better than most the practical and theoretical.

As a rule, those who write about chemistry put forth books which are either exceedingly elementary, or, to the ordinary student, frightfully profound, and there are some who have succeeded in combining the two in such exquisite proportions that it is impossible for a beginner to follow them at all. Here, however, much of this has been avoided, and, on the whole, no book is better fitted to be placed in the hands of one who is about to make his first step in the field of general chemistry.

In the portion relating to organic chemistry, the author has followed no ordinary rule, but has, for the sake of increasing the interest of the study, followed what might be called a natural order. It may be that more is gained than lost by such a course. It certainly will commend itself to beginners and those who do not wish to follow chemistry far, and for this class the book is more particularly intended. It has the disadvantage, however, of rendering it somewhat more difficult at a later period for those who pursue their chemical studies to place together in their minds those substances that are now believed to be especially related to each other.

For the teacher of chemistry the work has an advantage not possessed by any other recent work. That is the large number of experiments, many of them new, descriptions of which, accompanied by excellent wood-cuts, are to be

found throughout the work, and which are of value to the student also. On the whole, the work is well adapted for the place it is intended to fill.

It is well printed upon good paper, and the execution of the wood-cuts is much better than is often found in works printed on this side of the Atlantic.

H. B. H.

ART. XXXVIII.—*On the Results of Thyrotomy for the Removal of Growths from the Larynx.* By MORELL MACKENZIE, M.D. Lond.; Physician to the Hospital for Diseases of the Throat; Senior Assistant Physician to the London Hospital, etc. 8vo. pp. 22. London: J. & A. Churchill, 1873.

THIS decidedly controversial brochure is published by the author in reply to Mr. Durham's paper, read before the Royal Medical and Chirurgical Society. It is an admirable illustration of how learned doctors can have a lively disagreement over dry statistics. Mr. Durham, having selected a limited number of cases, comes to the conclusion "that the dangers and difficulties attending the operation [of thyrotomy for the removal of growths from the larynx] are neither so numerous nor so considerable as have been represented and commonly supposed," and urges an "earlier, bolder, and more ready resort to this method."

Mr. Mackenzie, who has carefully tabulated the same and additional cases of thyrotomy reported, making forty-eight in all, comes to directly opposite conclusions. The high rate of mortality (over 8 per cent.) attending this operation, the greater or less impairment of the voice ensuing in nearly one-half of the cases, the frequent recurrence of even benign tumours, and the fact that many of the cases thus operated upon had to continue wearing the tracheal canula, are very ably urged by Mr. Mackenzie, and laryngoscopists in general, as reasons why the extra-laryngeal method "should be confined to those cases in which there is danger to life from suffocation or dysphagia, and then only be performed after an experienced laryngoscopist has pronounced it impossible to remove the growth *per vias naturales.*"

We have never but once seen this operation performed, and that was the unfortunate case of Schrötter, where, even after the larynx had been split open, it was found impossible to remove the entire growth. We fear that thyrotomy, despite the prominence given to it by this protracted controversy, is doomed to comparative neglect, unless much more brilliant results are adduced, or until it be required for the introduction of some kind of artificial vocal apparatus that remains yet to be discovered.

R. M. B.

ART. XXXIX.—*Essays on Diseases of Children.* By WILLIAM HENRY DAY, M.D., M.R.C.P., Physician to the Samaritan Free Hospital for Women and Children. 12mo., pp. 191. London: J. & A. Churchill, 1873.

THIS little volume contains six papers, three of which, we are told in the preface, have already been given to the profession through the media of the *St. Andrews Graduates' Association Transactions*, the *Lancet*, and *British Medical Journal*; the remainder were read before the Harveian Society of London. They treat of—1, Debility in Children; 2, Remittent Fever; 3, Obscure Cerebral Disease; 4, Headaches; 5, Laryngeal and Tracheal Irritation; 6, Croup;

the whole being preceded by a chapter on the Study of Children's Diseases. Under the head of debility, Dr. Day enumerates a group of symptoms which, he says, is very commonly met with among the out-patients of the London hospitals. The most prominent of these symptoms is, to quote his own language, "atony, weakness, or preternatural slowness in the performance or working of the vital processes, leading, when neglected or overlooked, to debility (and it may be to structural change) in one or more of the great central organs of life or tissues of the body." There can be but little doubt that debility engendered by want of food, by exposure, or by some other cause, may frequently precede the outbreak of actual disease, but we are inclined to think that the cases are more numerous in which prolonged debility is the indication either of disease really present, or of a predisposition to it, for we have often seen children presenting the group of symptoms detailed by the author, in whom no other cause for it than an inherited or acquired diathesis could be discovered; but it is unquestionably important to recognize the stage preceding the occurrence of organic lesions, since it is then that treatment to be most efficacious should be instituted. Dr. Day, although by no means a sceptic in regard to the action of drugs, lays great strength upon the importance of a proper arrangement of the diet, and we are glad to find him condemning the use alike of farinaceous substances and of animal broths as articles of food for very young infants.

The chapter on infantile remittent fever is a very long one. Notwithstanding the use of this term by the author, he holds that the disease is really typhoid fever—a position which he thinks is proved by the fact that cases presenting unmistakably at first the symptoms of infantile remittent occasionally terminate in typhoid fever. That this sometimes happens there can be no reasonable doubt; but although Dr. Day is sustained in his opinion by the authority of Dr. West, we are convinced that in a large number of instances the fever depends upon some gastric or intestinal irritation, and is entirely distinct from enteric fever, being, in fact, the analogue of simple continued fever in the adult.

In the chapter on "Obscure Cerebral Disease," an interesting case is very fully reported in which an imperfect recovery finally took place notwithstanding the long continuance of threatening symptoms indicating a serious lesion of the brain. Headaches occurring in children, Dr. Day thinks may be classified as follows: 1. Cerebral headache, attributable to injury, or to chronic or acute inflammation; 2. Gastric headache, from intestinal and hepatic derangement, known as bilious headache; 3. Epileptic headache; 4. Febrile headache; 5. Headache from anæmia, neuralgia, etc., constituting nervous headache; 6. Headache depending upon some intricate change in the cerebral membranes or tissues of the brain. In the treatment of the last class the author recommends that bromide of potassium should be administered until the headache diminishes, when some mild preparation of iron may be employed to complete the cure. "Drugs" he, however, takes care to add, "are not to be exclusively relied on; these little patients should have the benefit of the pure air of the sea in summer, if it can be obtained for them, or some warm inland place in winter. Nourishing food and suitable clothing are of paramount importance, and lessons and nursery descipline should be given up till the health is re-established, and the brain stronger."

The two last chapters contain nothing which seems to call for special comment, except that the author does not point out the differences between false and true croup quite as clearly as seems to be desirable. Thus, in speaking of pseudo-membranous laryngitis, he says, "the professional man most commonly recognizes the disease by the spasmodic closure of the larynx, the prolonged and crowing inspiration, and the fear of impending suffocation." Crowing in-

spiration is of frequent occurrence in spasmodic croup, but it is scarcely possible that it can be a symptom of the graver disease when fully formed.

These essays are well written, and the physician as well as the student will find some excellent directions for the detection of disease, and for the management of children, in the first chapter; but we think that the views expressed in them are scarcely novel enough to justify the author in having collected and issued them in book form. J. H. H.

ART. XL.—*The Student's Guide to Medical Diagnosis.* By SAMUEL FENWICK, M.D., F.R.C.P., Assistant Physician to the London Hospital. From the third revised and enlarged English edition. With eighty-four illustrations on wood. 12mo. pp. xxiv., 328. Philadelphia: Henry C. Lea, 1873.

Two full editions of Dr. Fenwick's Guide to Medical Diagnosis have been exhausted since the first appearance of the book in 1869, and we may therefore conclude that it has been found of valuable assistance by the London students of medicine in the prosecution of their clinical studies. It is now for the first time placed within the reach of American students.

Very many changes have been made in the present edition, most of them necessitated by the constant progress of the science of diagnosis. Thus, the author has introduced a few pages on inflammation and a chapter on diseases of the skin, and discusses at much greater length than before the diseases of the lungs, heart, and brain, and the symptoms to which they give rise. The aid afforded in practice by the use of the thermometer, laryngoscope, and ophthalmoscope is also fully referred to. He does not express very positively his own opinion of the nature of inflammation, saying that the pus cell may arise either from the migration and multiplication of the white blood-corpuscle, or from the rapid proliferation of cells from the elements of the tissue involved Three forms of pneumonia are described: the croupous, the catarrhal, and the interstitial; the relation of phthisis with the second of these forms, as well as the distinction between the products of caseous degeneration and true tubercle, being clearly pointed out.

Some of the wood-cuts present in the previous edition have been withdrawn, but their place has been supplied by others, and many new ones have been added.

The book is one of the best of its class, and the publisher has issued it in a convenient form. J. H. H.

ART. XLI.—*On the Mechanical Treatment of Disease of the Hip-joint.* By CHARLES FAYETTE TAYLOR, M.D., Surgeon to the New York Orthopædic Disp. and Hosp., etc. 8vo. pp. 62. New York: William Wood & Co., 1873.

THE author of this very slender volume condemns tenotomy, as being unnecessary in the treatment of hip-disease, and recommends an apparatus of his own devising, by which the affected limb may be abducted as well as extended. We are disposed to agree with Dr. Taylor in regarding hip disease as a local and, ordinarily, a traumatic affection; but we think that the surgeon who attempts to treat it by exclusively "mechanical" means, does justice neither to himself nor to his patient. It is indeed a grievous error of modern surgery to

attend so much as is now done to dressings and topical remedies, and so little to the patient's general condition: we need a new Abernethy to arise and direct our minds once more to the "constitutional treatment of local diseases."

Dr. Taylor's volume contains fifteen illustrations, which, though serving well enough to exhibit the mode of applying his apparatus, can by no means be commended for artistic elegance. J. A., JR.

ART. XLII.—*The Science and Practice of Medicine.* By WILLIAM AITKEN, M.D. Edin., Prof. of Pathology in the Army Medical School; etc. Third American from the sixth London edition, greatly enlarged, remodelled, carefully revised, etc. With additions by MEREDITH CLYMER, M.D. (Univ. Penn.), Ex-Prof. of Institutes and Practice of Medicine in University of New York, etc. 2 vols., with steel plate map and one hundred and eighty woodcuts. Royal 8vo., pp. 1056. Philadelphia: Lindsay & Blakiston, 1872.

Lectures on Clinical Medicine. By A. TROUSSEAU, late Prof. of Clinical Medicine in the Faculty of Medicine, Paris; Phys. to the Hôtel-Dieu, etc. Translated from the third revised and enlarged edition, by SIR JOHN ROSE CORMACK, M.D., F.R.S.E.; and P. VICTOR BAZIRE, M.D., Assistant Physician to National Hospital for the Paralyzed, etc. 2 vols. Royal 8vo., pp. 925, 992. Philadelphia: Lindsay & Blakiston, 1873.

THE two works whose titles are given above are well known to medical readers on both sides of the Atlantic, and the high appreciation in which they are held is amply attested by the numerous editions through which they have passed.

The present edition of Dr. Aitken's Practice has been reprinted, in this country, like its predecessor, under the editorial supervision of Dr. Meredith Clymer. We notice among the principal additions made by the editor articles on Epidemic Cerebro-Spinal Meningitis, Chronic Malarial Toxæmia, Typho-Malarial Fever, Myelo-Sclerosic Paralysis, and Cerebro-Spinal Paralysis.

The edition before us of Trousseau's Clinical Medicine is a reprint of that issued by the New Sydenham Society in five volumes. The American publishers have, for obvious reasons, and we think wisely, replaced the lectures in the order in which they originally appeared, and have omitted the notes which Dr. Bazire inserted in that portion which he translated. The work is complete in two volumes. I. M. H.

ART. XLIII.—*Photographic Clinique of the British Hospital for Diseases of the Skin.* A Quarterly Periodical. Edited by BALMANNO SQUIRE, M.B., F.L.S., Surgeon to the Hospital. London: Nos. 1, 2, 3, 4.

WE have before us the first four numbers of the above work. What the aim of the author is, or what is to be looked for in the future, must remain for the present a matter of conjecture, for neither prospectus nor preface accompanies the fasciculi. Further than that it is a "quarterly periodical," and "published by subscription," as printed upon the cover, no other information of the plan or scope of the work is given. Judging from the photographs, we suppose that the work is to be made up of a series of the more interesting cases as they occur from time to time at the British Hospital clinic, accompanied by notes.

Upon turning the cover, "No. I.—Oval or true keloid," with the photograph, meets the eye. A short description of keloid is given, followed by an account of the case represented. The writer takes exception to the old terms "spontaneous" and "cicatricial," as distinguishing the two kinds of keloid, and adopts, based upon his own experience, a *syphilitic* and *non-syphilitic keloid*. The ground for this surprising change is found in the assertion that "spontaneous or oval keloid" occurs not only spontaneously but also in the cicatrices of burns and other wounds, while "cicatricial or cylindrical keloid," of which the writer states he has never seen more than two or three examples, always develops upon the scars of syphilitic ulcers! In other words, cicatricial or cylindrical keloid is considered a rare disease, never encountered except upon a scar, "and that a syphilitic one;" whilst true keloid may either occur spontaneously, or may be developed on some pre-existing scar! We are at a loss to comprehend the idea as expressed by the writer.

In plate No. II., "Rodent Ulcer," occupying the left side of the nose, is portrayed, accompanied by full notes of the case. No. III. represents a "serpiginous ulcerating syphilide," involving the shoulder and lumbar region. Plate IV. shows a "vascular nævus with hypertrophic acne" of the cheeks and one side of the forehead, accompanied in a like manner by a few lines of text.

So close the four fasciculi, each number containing one photograph, with the notes of the case.

The photographs, full cabinet size, are not up to the average standard, and though coloured, show indifferent artistic execution. The publication appears to be a continuation of the author's former atlas, entitled "Coloured Photographs of Diseases of the Skin." An undertaking, such as the one under consideration is designed to be, calls for a high order of artistic skill to render the work instructive as well as attractive. There is nothing to be learned from photographs which have been hurriedly or imperfectly coloured. A plain, untouched photograph affords a clearer conception of disease than a crudely painted one.

L. A. D.

ART. XLIV.—*Handbook of Physiology.* By WILLIAM SENHOUSE KIRKES, M.D. Edited by W. MORRANT BAKER, F.R.C.S., Lecturer on Physiology, and Assistant Surgeon to St. Bartholomew's Hospital. With two hundred and forty-eight illustrations. A new American from the eighth enlarged English edition. 12mo. pp. 656. Philadelphia: Henry C. Lea, 1873.

DURING the sixteen years which have elapsed since the publication of the last American edition, this valuable manual has passed through five editions in London; the last three of which, owing to the death of Mr. Kirkes (which lamented event occurred in the year 1864), have been edited by Mr. W. Morrant Baker, Lecturer on Physiology at St. Bartholomew's Hospital Medical College.

Mr. Baker has endeavoured to keep the work abreast with the constant advance in our knowledge of human physiology, and his labours have tended to maintain the popularity which "Kirke's Physiology" has always justly enjoyed among students.

The book is beautifully printed on good paper, and presents an appearance which becomes the best *handbook* of human physiology in the English language.

I. M. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Localization of the Functions of the Brain.*—In our number for July last, p. 241, we gave the conclusions arrived at by Dr. Ferrier from numerous experiments made in the Laboratory of the West Riding Asylum. Dr. F. has since, in a paper read before the British Association for the Advancement of Science, given a full account of his experiments, which throw an almost entirely new light upon the connection of the different parts of the brain with the actions, the sensations and instincts of living beings; we shall recur to the subject and present the abstract of his paper as given in the *Medical Times and Gazette* (Sept. 27, 1873):—

We are all agreed, Dr. F. said, that it is with the brain we feel, and think, and will; but whether there are certain parts of the brain devoted to particular manifestations is a subject on which we have only imperfect speculations or data too insufficient for the formation of a scientific opinion. The general view is that the brain as a whole subserves mental operations, and that there are no parts specially devoted to any particular functions. This has been recently expressed by so high an authority as Professor Séquard. The idea rests chiefly on the numerous facts of disease with which we are acquainted. There are cases where extensive tracts of brain are destroyed by disease, or removed after a fracture, apparently with no result as regards the mind of the individual. Along with these facts we have others which are very curious, and which hardly seem to agree with this doctrine. One of these is that when a certain part of the brain is diseased, in aphasia, the individual is unable to express himself in words. Other curious phenomena have been well described by Dr. Hughlings-Jackson—viz., that certain tumours or pathological lesions in particular parts of the brain give rise, by the irritation which they keep up, to epileptiform convulsions of the whole of one side, or of the arm or leg or the muscles of the face; and from studying the way in which these convulsions show themselves he was able to localize very accurately the seat of the lesion. The great difficulty in the study of the function of the brain has been in the want of a proper method. When we study the function of a nerve, we make our experiments in two ways. In the first place, we irritate the nerve by scratching, or by electricity, or by chemical action, and observe the effect; and in the second place, we cut the nerve, and observe what is lost. In regard to the brain and nervous system, the method has been almost entirely, until recently, the method of section. It has been stated by physiologists that it is impossible to excite the brain into action by any stimulus that may be applied to it, even that of an electric current; they have, therefore, adopted the method of destroying parts of the brain.

This method is liable to many fallacies. The brain is such a complex organ that to destroy one part is necessarily to destroy many other parts, and the phenomena are so complex that one cannot attribute their loss to the failure only of the parts which the physiologists have attempted to destroy. About three years ago, two German physiologists, Fritsch and Hitze, by passing galvanic currents through parts of the brains of dogs, obtained various movements of the limbs, such as adduction, flexion, and extension. They thus discovered an important method of research, but they did not pursue their experiments to the extent that they might have done, and perhaps did not exactly appreciate the significance of the facts at which they had arrived.

I was led (said Dr. Ferrier) to the experiments which I shall have to explain by the effects of epilepsy and of chorea, which have been supposed to depend upon irritation of parts of the brain. I endeavoured to imitate the effects of disease on the lower animals, and determined to adopt the plan of stimulating the parts of the brain by electricity after the manner described by Fritsch and Hitze. I have operated on nearly a hundred animals of all classes—fish, frogs, fowls, pigeons, rats, guineapigs, rabbits, cats, dogs, jackals, and monkeys. The plan was to remove the skull, and keep the animal in a state of comparative insensibility by chloroform. So little was the operation felt that I have known a monkey, with one side of the skull removed, awake out of the state induced by the chloroform, and proceed to catch flies or eat bread and butter. When the animal was exhausted I sometimes gave it a little refreshment, which it took in the midst of the experiments. Referring next to his experiments on cats, Professor Ferrier stated that on applying the electrode to a portion of the superior external convolution the animal lifted its shoulder and paw (on the opposite side to that stimulated) as if about to walk forward; stimulating other parts of the same convolution, it brought the paw suddenly back, or put out its foot as if to grasp something, or brought forward its hind leg as if about to walk, or held back its head as if astonished, or turned it on one side as if looking at something, according to the particular part stimulated. The actions produced by stimulating the various parts of the middle external convolution were a drawing up of the side of the face, a backward movement of the whiskers, a turning of the head, and a contraction of the pupil respectively. A similar treatment of the lower external convolution produced certain movements of the angles of the mouth; the animal opened the mouth widely, moved its tongue, and uttered loud cries, or mewed in a lively way, sometimes starting up and lashing its tail as if in a furious rage. The stimulation of one part of this convolution caused the animal to screw up its nostrils on the same side; and curiously enough, it was that part which gave off a nerve to the nostril of the same side. He then explained in like manner the results produced by the stimulation of corresponding or homologous parts of the rat, the rabbit, and the monkey. Acting upon the anterior part of the ascending frontal convolution, the monkey was made to put forward its hand as if about to grasp. Stimulation of other portions acted upon the biceps, or upon the zygomatic muscles. The part that appeared to be connected with the opening of the mouth and the movement of the tongue was homologous to the part affected in man in cases of aphasia. Stimulation of the middle part of the temporo-sphenoidal convolution produced no results; but the lower part of the temporo-sphenoidal, when acted upon, caused the monkey to shut its nostrils. No result was obtained in connection with the occipital lobes. These experiments, he said, had an important bearing upon the diagnosis of cerebral disease, and the exact localization of the parts affected. He was able to produce epileptic convulsions in the animals experimented upon, as well as phenomena resembling those of chorea. The experiments were also important anatomically, as indicating points of great significance in reference to the homology of the brain in lower animals and in man, and they likewise served to explain some curious forms of expression common to man and the lower animals. The common tendency, when any strong exertion is made with the right hand, to retract the angle of the mouth and open the mouth on the same side, had been stated by Oken, in his *Natur-Geschichte*, to be due to the homology between the upper limbs and the upper jaw; the true explanation being that the movements of the

fist and of the mouth are in such close relation to each other that when one is made to act powerfully the impression diffuses itself to the other parts of the brain, so that the two act together. The experiments had also a psychological significance. There was reason to believe that when the different parts of the brain were stimulated, ideas were excited in the animals experimented upon, but it was difficult to say what the ideas were. There was, no doubt, a close relation between certain muscular movements and certain ideas which would prove capable of explanation. This was supported by the phenomena of epileptic insanity. The most important guide on the psychological aspect of the question was the disease known as aphasia. The part of the brain which was the seat of the memory of words was that which governed the movements of the mouth and the tongue. In aphasia the disease was generally on the left side of the brain, in the posterior part of the inferior frontal convolution, and it was generally associated with paralysis of the right hand; and the reason might be supposed to be that the part of the brain affected was nearly related to the part governing the movements of the right hand. It was essential to remember that the movements of the mouth were governed bilaterally from each hemisphere. The brain was symmetrical, and he held it to be a mistake to suppose that the faculty of speech was localized on the left side of the brain. The reason why an individual lost his speech when the left side of the brain was diseased was simply this: most persons were right-handed, and therefore left-brained, the left side of the brain governing the right side of the body. Men naturally seized a thing with the right hand, and they naturally therefore used rather the left side of the brain than the right, and when there was disease there the individual felt like one who had suddenly lost the use of his right arm. After describing some further experiments on pigeons, Professor Ferrier alluded to the results of stimulating the different ganglia. Stimulation of the corpora striata caused the limbs to be flexed; of the optic thalami produced no result; of the corpora quadrigemina produced, when the anterior tubercles were acted upon, an intense dilatation of the pupil, and a tendency to draw back the head and extend the limbs as in episthotonos; while the stimulation of the posterior tubercles led to the production of all kinds of noises. By stimulating the cerebellum various movements of the eyeballs were produced.

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2. *The Posterior Columns of the Spinal Cord considered from Anatomical and Pathological points of view.*—Mr. Pierret, in an interesting paper on this subject, shows in a simple manner, the arrangement of the posterior fibres of the cord; and for this purpose he collects his facts from fœtal, normal, and pathological anatomy. These facts are shortly as follows. If we examine a transverse section of the cord of a fœtus of six or seven weeks, we find an irregular quadrilateral body containing a lozenge-shaped hole which is the central canal. Of the four angles of this lozenge, the anterior and posterior correspond to the anterior and posterior commissures. The lateral divide the cord into two parts, the anterior of which forms the anterior horns, and the anterolateral columns. The posterior, which is the part under consideration, forms the posterior horns and the posterior columns. In the embryo taken as a type, these posterior columns are represented by two zones of white matter united to the embryonic gray matter. These receive the posterior roots which are already visible, and may be called the *zones radiculaires*. These zones are situated on each side of the posterior angle of the central canal; they are separated behind by a fine layer of embryonic connective tissue, which subsequently forms the gray commissure. Their direction is oblique from behind forwards, and from within outwards; their anterior borders, adhering, answer to the embryonic substance of the caput cornu posterioris, their posterior borders are free; the anterior angles of these receive, as before stated, the posterior nerve-roots.

From the seventh to the eighth week of embryonic life, these zones are plainly marked, and represent alone the posterior columns. But from the eighth to the ninth week there is an alteration in their appearance. Inside their posterior angles and behind the gray commissure, there appears on each side a

small nipple-shaped elevation, which in a more advanced age represents what are called *les cordons grêles*, or the columns of Goll. The relations of these eminences to the surrounding parts are very important, for they persist throughout fœtal life, and are present in the adult, although very difficult of demonstration. They are separated from each other by the middle posterior fissure, and from the *zones radiculaires* by a slight furrow, which later on exists only in the cervical region; they appear to grow from what afterwards becomes the gray commissure. The growth of the new columns is apparently from above downwards, that is to say, they are in early fœtal life more easily demonstrated in the cervical than in the dorsal region, and the lumbar region is the last in which they distinctly appear.

With regard to the normal anatomy of this portion of the cord, several authors who have given attention to this subject are cited. Among them is Foville, who, in 1844, affirmed the existence of the *faisceu médian* in the whole length of the cord, and assigned to it the part of a longitudinal commissure. Leuret and Gratiolet, in recognizing this middle column, did not point out sufficiently accurately either its origin or its connections. More recently, John Dean, who only studied the lumbar enlargement, propagated certain opinions, which, although they were correct with regard to that portion of the cord, were not at all so when applied to other portions. The result of the publication of his ideas was to check the progress of research in this direction. The idea of the existence of longitudinal commissural fibres was generally accepted. Vulpian says, "In my opinion, it cannot be doubted that the posterior columns are in great part composed of commissural fibres of a greater or less length, serving as means of communication between portions of the cord more or less separated from each other." The same author, in another passage, gives the following description of the course of the nerve roots. "These penetrate the posterior column, and therein pursue an oblique but ascending course, appearing to confine themselves to the outer surface; after a short course, they bury themselves in the gray substance." Therefore, if these root-fibres occupy the external border of the posterior column, it follows of necessity that the median parts of these columns are made up of longitudinal commissural fibres, constituting thus the middle fasciculus, which ought really to be considered as the posterior column.

Modern histologists seem to have overlooked, in their researches into this subject, the data obtained from the study of embryological anatomy.

Now the study of the embryo renders the explanation of this portion of the cord very easy and simple; and if in the adult the external form is a little varied, the posterior column is none the less formed by the attachment of the *zones radiculaires* to the *cordon médian*.

This disposition of the fibres may be seen by transverse and vertical sections. By means of longitudinal sections, parallel with the posterior commissure, the posterior column appears to be divided into three parts; one, median, is formed by parallel vertical fibres; the two others, situated externally to the first, and within the posterior horns, are formed by nerve-fibres which do not seem to have a very distant destination; in fact, some may be seen entering the gray matter of the posterior horn.

The connections of these three parts differ in different parts of the cord, and according to the size of the entering nerve-roots. Narrow in the dorsal region, larger in the cervical, in the lumbar region the *zones radiculaires* become so large that they absorb the fibres of the median column, which in this region is rather small. In its turn, however, the median column increases in size towards the middle of the dorsal region, till it forms almost the entire posterior column.

Are the parallel fibres of this median bundle commissural? To settle this question, longitudinal sections must be made, dividing the gray commissure in a direction perpendicular to its internal surface. Some fibres are then seen leaving the commissure to bury themselves in the posterior columns, and without doubt some of these fibres intersect each other.

In making the above preparations, another fact presents itself—namely, that the vesicular columns of Clarke are shown to be connected by certain fibres to

the posterior columns: and hence it may fairly be concluded that they play an important part in the transmission of sensitive impressions.

In the dorsal region, as has been shown, the median column is of considerable importance; and, if we follow it up to the cervical region, where it is called the bundle of Goll, we find that it is connected to two small eminences known as the posterior pyramids, which appear to be integral parts of the posterior system of the spinal cord.

Pathological anatomy also furnishes facts which bear out those data obtained by the study of embryological and normal anatomy.

There is a class of spinal diseases, the main pathological symptom of which is sclerosis. According to M. Charcot, the study of these leads to a morbid topography of the cord, which ought to aid materially the true comprehension both of the anatomy and physiology of their nervous centres. Indeed, they are such as enable the following propositions to be laid down as established with regard to the median column.

1. There are throughout the entire length of the posterior region of the cord longitudinal fibres which are more superficial, or approach nearer to the middle fissure, the longer the course they have to run.

2. In the entire length of the posterior columns, longitudinal fibres taking their origin in the gray matter, at different levels after longer or shorter courses, re-enter the gray matter.

In a case of locomotor ataxy, the *zones radiculaires* were the portion of the posterior columns selected by the sclerosis, and this again enabled the form of the median bundle to be clearly seen. Pathology thus demonstrates the existence of these two parts of the posterior columns.

Finally, condensing what has been derived from the three different branches of anatomical study, the following facts present themselves.

The posterior column contains, like the lateral column, commissural fibres of different lengths, some of which are long enough to connect the lumbar enlargement and the posterior pyramids. These fibres spring from the gray matter, and most probably possess intimate relations with the vesicular columns of Clarke. Those fibres which approach nearest to the commissure appear to be the shortest. By the union of these fibres a fusiform column is formed, which is largest in the upper third of the dorsal region. The superior fibres in part terminate in the ganglionic nuclei of the posterior pyramids. The fibres forming the posterior median column are finer than those contained in the lateral external parts of the posterior column.

These external columns are formed mainly by the *zones radiculaires*, which appear in fœtal life before the posterior median column.

The different relations, the want of synchronism in their development, the difference in structure, and lastly, the special symptoms which result from the lesion of the one or the other, lead to the inference that the functions of these two constituent parts of the posterior column are different.—*London Medical Record*, Oct. 29, and *Archives de Phys. Normale et Path.*, Sept. 1873.

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3. *On the Diverticulum of the Small Intestine considered as a Rudimentary Structure.*—Prof. Struthers, of Aberdeen, in a paper read before the British Association at its late meeting, took this structure as an illustration in reply to those who are not yet satisfied that structures exist which are useless to the animal body containing them. Referring first to the case of the appendix vermiformis of the great intestine, a survey of the anatomy of the cæcum in various animals, and of the stages of its development in man, leads to the inference that this worm-like appendage is a rudimentary and virtually a useless structure. It has, however, been generally supposed that, being present, it must have some function; and as it was manifest that a thing of this kind at the otherwise closed end of the great intestine is a source of danger by admitting foreign bodies which it could not expel, it has been argued that contrivances designed to avert this danger might be recognized. That it opens at the back instead of at the bottom of the cæcum; that its opening is oblique; that it has a kind of valve; that it is directed more or less upwards; and so on. On the contrary, the worm-like appendix is a vestige, the rudimentary representative

of the true cæcum, and all these supposed contrivances by which the danger is lessened are simply the result of the forward and downward development of the great intestine away from the resisting wall of the abdominal cavity against which the appendix and back of the intestine lie. Although from this cause the appendix vermiformis is not nearly so dangerous a structure as it might have been, it is, notwithstanding, occasionally the cause of death. The author knew of several cases of this, and every experienced pathologist must have met with it. Foreign matters get impacted, causing ulceration, and perforation takes place, followed after a few hours by death.

The conclusion, however, that there are parts within the animal body which are useless, and worse than useless, because dangerous, is so distasteful to the adherents of the extreme theological school that they will rather fall back on the bare possibility of some unknown function even for such a rudiment. The diverticulum of the small intestine may be employed here to complete the argument. Although in a classification of rudimentary structures they would be placed in different groups, the one being normal though often varying, the other only occasional, they are on the same footing for the purposes of this argument. It is known to be a vestige of the structure joining the intestine by which, at an early stage of the evolution of the animal frame, nourishment is introduced. All trace of it usually disappears, but occasionally part of it remains as a pouch opening from the small intestine. It has the usual coats of intestine, the inner coat presenting the same food-absorbing villi. It is therefore acting, but no one will argue that it is designed for use in those comparatively few persons who possess it. Unfortunately, it is sometimes the cause of death. The author had met with cases of this, and it is well known to surgeons. It may be unable to expel its contents; or by adhering to a neighbouring part a noose is formed, a most dangerous condition, a sort of bowel-trap, through which a knuckle of intestine slips, and strangulation, followed by death, is the result. Here then we have an elaborate structure which is useless, or worse because dangerous. Were a railway contractor to leave open a siding which he had used in the construction of the line, the train might dash into it, and a fatal accident result. This is exactly what is done when the diverticulum of the small intestine is left unclosed, and the fatal accident occasionally occurs. Were further illustration necessary, we might refer to the fact of disease sometimes attacking that functionless structure the rudimentary breast in the male.

The consideration of such structures as the diverticulum may be said not to take us further than to clear the ground, showing us that we have been on the wrong path. But a survey of rudimentary structures generally carries us farther. On the hypothesis of the independent origin of species they are unintelligible, while the hypothesis of evolution furnishes a clue to the whole. The facts of embryology, of palæontology, of rudimentary as well as developed structures are harmonized, and the whole present themselves as the result of the operation of a great law, the equivalent in the organic world of the law of gravitation in the inorganic. Although we do not as yet see so well how this biological law operates, the anatomist sees enough to make him feel that he is shut up to some form or other of the theory of evolution, and that the notion which we imbibed in our early years, and have long cherished, that so-called species arose independently of each other, must be a mistake.

The slow progress which this view has made in this country compared with Germany, the author attributed partly to the teleological bias which anatomy early received among us, but mainly to the fact that anatomy has been taught in the medical schools of this country for the most part as a mass of detail in its professional application, without reference to the ideas which it suggests when more widely and profoundly studied as a science.—*London Med. Record*, November 5, 1873.

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4. *Structure of the Neck of the Femur: the Calcar Femorale.*—Dr. MERKEL describes in the *Centralblatt für die Medicin. Wissenschaften*, No. 27, 1873, an arrangement of the hard bony tissue in the neck of the femur, of which he says no account has hitherto been given, and which he terms the *calcar femorale* (*Schenkelsporn*). It consists in a process of the cortical sub-

stance, which projects into the spongy substance to the depth of about a centimeter; it arises about the level of the trochanter minor, and ends close under the head of the bone at the anterior part of the neck, thus occupying the situation where the greatest pressure is made in the erect position. In newly born children, it is absent; it appears when they begin to walk, attains its greatest development in middle age, and completely disappears in old persons. These conditions explain the variations in the angle of the neck of the bone at different periods of life, and the increased liability to fracture of the part in old age.—*Brit. Med. Journ.*, Nov. 8, 1873.

5. *Migration of White Corpuscles.*—Dr. THOMAS read before the German Association of Naturalists at Wiesbaden, a paper on the migration of white corpuscles into the lymphatics of the tongue of the frog. He injected the lymphatics of the living animal with an extremely dilute solution, not containing more than from 1-2000th to 1-8000th part of nitrate of silver, and found that, with certain precautions, this did not lead to stasis of the blood in bloodvessels, but only to a lively exodus of the white corpuscles from their interior. After the lapse of some time, when the parts had begun to recover from the injurious effects of the injection, he was able to observe the re-entrance of the corpuscles into the lymphatic vessels through certain stomata in their walls, now marked and rendered distinct by a precipitate of the silver salt. In a second series of researches the lymphatics were injected with a dilute emulsion of cinnabar in a three-quarter per cent. solution of common salt. The cinnabar was in part deposited in the stomata of the lymphatics, and partly passed through them, and was deposited in the tissues in the form of small, round, cloudy patches. The evidence of the identity of the stomata brought into view by means of cinnabar, with those rendered apparent by means of nitrate of silver is obtained by observing their peculiar grouping, and by the subsequent injection of nitrate of silver into the same vessels. The injection of cinnabar causes very little disturbance of the circulation. If a lively exodus of the white corpuscles from the bloodvessels be produced by making an abrasion of the surface, the migrating cells quickly make their appearance in the stomata of the lymphatics marked out by the cinnabar. They then take up the particles of cinnabar into their interior, which causes them to lose their activity, and accumulate in the stomata. They then appear in the form of cauliflower excrescences projecting into the interior of the lymphatics, which gradually break up into their constituent cinnabar-holding cells. These may be traced into the larger vessels, and from thence into the blood. In these researches a remarkable regularity or uniformity in the track pursued by the white corpuscles was observed. They pass away from the bloodvessels nearly at right angles into the tissues, their course, however, being in a series of short zigzags. They all appear to travel at about the same pace.—*Lancet*, October 25, 1873.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Action of Alcohol.*—The number of the *British Medical Journal* for October 4, 1873, contains an interesting paper on this subject by Dr. JAMES ROSS, of which we shall give a short abstract. Prof. Binz classes alcohol physiologically with quinia, and believes that these with other allied agents check the movements of white blood-corpuscles and other minute masses of living protoplasm, and that the effects of these agents on the higher organisms depend mainly upon their fundamental action upon protoplasm. "Starting from the fact," Dr. R. remarks, "that alcohol checks the movements of white blood-corpuscles, let us see what are the implications. If these movements are checked, it must be because the molecules of the protoplasm have assumed relatively fixed positions—are more near than before to a condition of equi-

librium. If the molecules had become very fixed, the protoplasm would be solid; but, although this does not take place, it is clear that, if the molecules are relatively more fixed than before, the protoplasm will be correspondingly more solid. And, if the protoplasm is rendered in any degree more solid, this will retard the exchange of material which ends in growth, and the detachment of material which ends in multiplication. If, then, we carry these conceptions with us into the higher organisms, it is evident that alcohol will tend to check the growth and multiplication of protoplasm over the body, and to promote the comparatively fixed arrangement of material which constitutes structure. I do not mean to assert that alcohol tends to develop a higher degree of structure than the organism has already attained to, but it tends to fix and consolidate the structure as it exists at the time. Briefly expressed, then, the effect of alcohol upon the higher organisms is to check growth and to consolidate structure.

"Suppose that alcohol is given to a young animal in relatively large and continued doses, if this theory be correct, it ought to check the animal's growth and to fix prematurely its structure; and this is found to be the case. When dog-fanciers wish to produce a small pet dog, I am told that a certain amount of gin is given daily to the animal from its birth; and this proceeding is effectual in producing a dog much smaller than the parents from which it is derived, and also smaller than the other dogs of the same litter that have not been treated with gin. I was once told by a medical man that he kept a prematurely born child alive the first three weeks of its life upon nothing but whiskey toddy. The child is now seven years of age, and a puny little idiot; but whether this is an effect of the whiskey toddy or not, I will not venture to decide. I have, however, seen other instances of dwarfing effects upon individuals, which I strongly suspect were caused by the too copious imbibition of alcohol when children. There are other children, however, who are much benefited by a certain amount of alcohol, principally in the shape of wine. These are the children of parents who have a tubercular tendency. In such children, the powers of growth are very active, but the structure is deficient. A very slight irritation causes the epithelial surfaces to proliferate, and amongst their internal tissues there is a relatively large amount of that loose little organized tissue called adenoid; and these are indications of an unstable condition of the structure of the body. If such a child have a slight surface-irritation, the neighbouring glands swell, and subsequently the child becomes pale and thin, but grows rapidly in height. He is said to be growing beyond his strength. A moderate amount of alcohol will tend to check this growth and to consolidate the structure, and will, of course, be advantageous. The beneficial effect of alcohol in the treatment of acute disease is readily explicable upon this theory. When the excessive growth of the protoplasm is checked, a further breaking down of structure is prevented. The potential force of the organized tissue is not converted into actual heat-vibrations, and consequently the temperature will fall.

"The effects produced by abuse of alcohol as an article of diet are also explicable upon this hypothesis. The diseases to which habitual drinkers are liable may briefly be summed up as premature decay of all the powers of life, fatty degeneration, rigidity of arteries from calcification, and consequent diseases of the circulation. All of these are examples of excessive consolidation of structure along with deficient powers of growth, or the results which follow from such a condition.

"I can only allude in very brief terms to the special influence which alcohol has upon the nervous system. It depends, in all probability, upon its action upon protoplasm in general, combined with its degree of diffusibility. But what of the stimulant effect of alcohol? The stimulant action is partly delusive, partly real. In so far as it is real, it must depend upon a certain amount of nervous energy being set free. I have already said that, during the development of structure, a certain amount of force is rendered latent; but this is not the case with the consolidation of structure which alcohol produces. In the former instance, the organic material is probably raised to a higher isomeric form; while in the latter it is equally probable that it falls into a lower. If the protoplasm, after the addition of alcohol, become in any degree more solid,

without becoming more complex in chemical constitution, this must be, in the language of Mr. Herbert Spencer, an integration of matter; and there must be a concomitant dissipation of motion. When, therefore, alcohol acts upon the soft nervous tissue, it renders it slightly more solid, similar to the action it has upon other protoplasm; and along with this action there must be a concomitant quantity of nervous energy set free. It is this diffused effect which goes by the name of the stimulant action of the drug."

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7. *Action of Alcohol on Warm-Blooded Animals.*—Dr. Binz, of Bonn, related at the recent meeting of the British Association for the Advancement of Science, the details of a number of experiments performed by him, which went to show that one important effect of alcohol upon the human frame is to diminish the temperature to the extent of from three to five degrees Fahrenheit, this effect being produced by the action of the alcohol on the heart, causing more blood to circulate through the vessels of the skin, which are dilated, and thus a larger quantity of blood is cooled down. The alleged heat of the organism from alcohol, he said, does not exist. The subjective impression is, at least partially, the consequence of an irritation of the nerves of the stomach and of the enlargement of the vessels arising in the skin. When given in small quantities, the thermometer shows no extraordinary increase or decrease of the temperature of the blood; moderate doses, which need not lead to drunkenness, show a distinct decrease of about half an hour's duration or more; and strong inebriating quantities evince a still more decided lowering, lasting several hours. The decrease after moderate doses takes place most successfully in warm-blooded animals which have not for some time previously had alcohol administered. Dr. Binz injected under the skin of rabbits or dogs about a cubic centimetre of ichor, which in a short time produced death; but not so if, with the ichor, alcohol diluted with water was administered either by the stomach or the skin. In the latter case the animal was quite lively and took kindly to its food; so that alcohol need not, he contended, be a narcotic. His experiments, he said, showed a threefold action—the diminution of the heat of the body, reduction of the putrid processes, and raising of the action of the heart. Alcohol was more than a simple stimulant: it was a strong antipyretic and an equally powerful antiseptic. It was *à priori* to be expected that alcohol would not be without its influence on the metamorphosis of tissues. An agent that, consumed in large doses, clearly lowered the combustion, must also be supposed to decrease the urea and the carbonic acid; and this was in reality the case.—*Med. Times and Gazette*, Oct. 4, 1873.

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8. *The Febrifuge Properties of the Cinchona Alkaloids—Cinchonia, Quinidia, and Cinchonidia.*—The *Edinburgh Med. Journ.* for September, 1873, contains an instructive report by Dr. Joseph Dougall, Surgeon Madras Army, of trials made by him of the above-named cinchona alkaloids. He reports 27 cases, and says they are a fair representation of 108 cases of intermittent fever, treated by one or the other of the above alkaloids. Most of the cases were of the quotidian form.

"In the trials made with the three alkaloids, they were used in succession indiscriminately as suitable cases occurred. Quinidia was given in thirty-nine cases, cinchonidia in thirty-five, and cinchonia in thirty-four. The sixteen cases of tertian were equally distributed among the three remedies. The whole 108 cases recovered, but in one the disease passed into remittent fever unchecked. In twenty-seven there was either no paroxysm at all after the first doses, or a very mild one merely, although the alkaloid was given during a single day only. In thirty others the treatment required to be continued only two days, and in fourteen others for three days. Thus, in seventy-one cases, or almost two-thirds, the fever was arrested within that period. In three only was it necessary to prolong the treatment to ten, twelve, and thirteen days.

"There was very little difference between the alkaloids in the necessary duration of treatment. But a difference was observed in the doses required. The average doses of quinidia varied between 31 and 70 grains, of cinchonia from 54 to 76, of cinchonidia from 43 to 90. Extreme cases are excluded from this

calculation, because tending to vitiate the result. The conclusion is that quinidia is the most powerful, cinchonidia next to it, and cinchonia the least active; but that even cinchonia is energetic, and in an adequate dose a sure remedy.

"The relation of these alkaloids to quinia in point of energy was not made the subject of express trial on this occasion. But prior observation justified the conclusion that it is equally active and certain in doses between two-thirds and three-fourths of those of quinidia. Quinia appeared more apt to aggravate headache during the paroxysm. It seems one of the best for preventing the tendency to relapse, when taken in small doses.

"In the first trials with the three other alkaloids they were given during the apyretic interval, according to the usual rule. Ere long they were given indiscriminately during paroxysm and intermission. At length it became apparent that they were most serviceable when administered during the paroxysm only. The same observation has been lately made in various parts of India in regard to the febrifuge action of sulphate of quinia.

"Quinidia appearing to be the most energetic of the alkaloids after quinia, some experiments were made on its physiological effects in the healthy state of the body. From trials on my own person, a dose of 10 to 15 grains, taken three hours after a light breakfast, occasioned severe nausea, afterwards slight griping, and in three hours one or two rather loose bilious discharges from the bowels. Twenty grains occasioned in twenty-five minutes so much nausea that vomiting could be restrained only by assuming the horizontal posture for an hour. In three hours three or four copious liquid bilious evacuations ensued. Twenty-five grains always induced vomiting, no matter what precautions were observed. These results will explain in some measure the physiological phenomena which often attended its curative action.

"Of the usual phenomena of 'cinchonism' observed during the free administration of quinia in intermittent fever, giddiness was the symptom most frequently noticed during the use of quinidia, as well as of cinchonia and cinchonidia, next ringing in the ears, next headache; and deafness occurred only twice. In twenty-six cases, however, there were no head symptoms produced at all. A more important concomitant of cure was bilious purging. This occurred indeed in fifty-four cases only, or exactly one-half of the whole. But the cure appeared to go on with greater speed and certainty when free bilious evacuations were produced. Accordingly when the alkaloids failed to act on the bowels singly, as in the cases which occurred in the Kimedy district, advantage was found in administering along with them a little podophyllin, or other cathartic. It was very rarely that the fever was not brought speedily to an end after bilious purging. This connection indeed is easily understood, for it was seldom that there was not present some indication of congestion of the liver during the fevers of Russelkondah and the adjacent districts, and this occasionally was well marked by the appearance of yellowness of the conjunctivæ. Reduction of the force of the pulse, and also of its frequency, was a common and early result of the administration of a full dose of these alkaloids. That effect was observed often when the remedy was given during the paroxysm, although the fever went on; and it was attended with much relief from the severity of the symptoms during what remained of the paroxysm.

"The conclusions flowing from the preceding inquiries seem of great practical consequence, since it has been established by frequent recent experience that in various circumstances quinidia, cinchonia, and cinchonidia are largely obtained from several valuable cinchona barks, used by manufacturers for obtaining quinia, and that they are by no means the feeble, much less the inert, febrifuge remedies which at one time they were too hastily assumed to be."

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9. *A Contribution to the Therapeutical History of Calomel.*—The instability of some mercurial compounds under the operation of physical agents and influences, not generally known as capable of affecting chemical union, involves considerations of grave importance both to the practice of medecine and to medical jurisprudence. Prof. BELLINI, of Florence, has reviewed this subject in a learned essay, the object of which is to show the possible change, either partial or complete, of calomel into corrosive sublimate within the living body. The

following are his most important conclusions, as the result established by clinical experience and experiments in the chemical laboratory.

"That calomel introduced by the mouth into the fasting subject is, in a very small portion of the stomach, and a greater of the small intestine, changed into a soluble mercurial compound.

"That in the stomach this change is effected by the lactic acid and the alkaline chlorides, and in the small intestine by the alkaline carbonates of the enteric fluids.

"That calomel introduced into a stomach which is digesting protein aliments is either wholly or almost decomposed within that viscus, and that the results of such decomposition are metallic mercury and a soluble mercurial compound.

"That acid drinks and fruit should be withheld during the use of calomel; but that magnesia, whether calcined or carbonated, administered during a course of calomel, promotes the local action of that mercurial.

"That the use of calomel may be injurious when contemporaneous with that of ammoniacal salts, and also in certain diseased conditions, *e. g.*, in those suffering from ammoniema, uro-ammoniema, cholera, typhus, etc.

"That the use of calomel might cause poisoning when administered contemporaneously with the hydrochloride of ammonium, with the aqua lauro-cerasi, with the alkaline or the metallic iodides and bromides, the alkaline sulphides, and the alkaline hydrobromates and hydriodates.

"That opium and its preparations exercise no decomposing power on calomel, but render its effects less perceptible, not by any chemical action, but by their control of the sensibility.

"That calomel applied externally, whether to a whole or an ulcerated surface, or introduced hypodermically, may be rendered soluble by the alkaline chlorides of the organic fluids with which it is brought into contact.

"That such external application may produce severe local lesions, if there be contemporaneous internal use of the alkaline iodides, bromides, or sulphides, or even of sulphur itself in small and frequent doses.

"And that lastly, clinical observation is in complete harmony with the results of chemical and physiological research."—*Dublin Journ. Med. Sci.*, Oct. 1873.

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10. *Coffee and Milk* (*Café au Lait*).—Dr. Marchand states (*Revue de Thérap. Med. Chirurg.*, 15 May, 1873) that everybody knows milk is a most valuable aliment, and coffee a tonic and precious stimulant, but he asserts that when they are taken together in suitable proportions, the tannin in the coffee coagulates the albumen and casein of the milk and thus forms a leathery-like substance which is wholly indigestible and unassimilable. He would therefore proscribe the use of coffee and milk together. Dr. M.'s chemistry may possibly be correct, but we doubt if any one who is in the habit of partaking of that delicious beverage, *café au lait*, will be led to abandon its use by Dr. M.'s theoretical speculations.

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11. *Fluid Adhesive Plaster.*—M. J. B. Enz has given the following formula for a fluid adhesive plaster, which is very adhesive and does not irritate the skin:—

℞.—Resin. dammar. pulv. 560 parts.
Ol. amygdal. dulc. . 142 "
Ol. ricini . . . 70 "
Glycerin. . . . 30 "
Ether sulph. alcoholis 225 to 240 parts.

The first four articles are to be mixed together in a moderate heat, and when the mass is half cooled the alcoholized sulphuric ether is added. It may be coloured red by adding a sufficient quantity of crystallized aniline red. In this way there is obtained a milky liquid of a syrupy consistence, which may be spread upon linen or muslin glazed with starch or fish glue, in the same way that English taffetys are prepared. The plaster dries rapidly when the ether has evaporated, and thus prepared it adheres very strongly to the skin, causes no irritation, and exerts no injurious action on wounds.

This plaster has also the advantage that all medicaments, soluble in alcohol,

may be incorporated with it, as ether, turpentine, chloroform, benzine, etc., while it may be mixed also with other articles, as phenic acid, arsenious acid, powdered cantharides, alcoholic extract of mezereon, alcoholic extract of belladonna, and of other narcotic extracts, corrosive sublimate, opium, permanganate of potassa, salts of morphia, iodide of potassium, etc.—*La Tribune Médicale*, 5 Oct. 1873, from the *Nieu tijdschrift voor de pharm. in Nederland.*

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

12. *New Researches on Inflammation.*—Prof. COHNHEIM has recently published his new researches on inflammation. In summing up the results of his observations he expresses the opinion that the essence of inflammation is not to be found in either the dilatation of the vessels, in the increased rapidity of the flow of blood, or in the subsequent contraction of the vessels; but in some local change in the walls of the vessels of the affected part. What this change is, however, he is unable to say, as he has not succeeded in finding any structural alteration.—*British Med. Journ.*, Sept. 27, 1873.

13. *Ascertained Facts regarding Diabetes and Hydruria.*—ECKHARDT gives a short *résumé* of the facts which have been experimentally ascertained regarding diabetes and hydruria, in the *Pester Medicinisch-Chirurgische Presse*, February 18. He remarks that but little has yet been made out with certainty, while uncertainties are numerous. Diabetes may be produced experimentally in two ways, either by operating directly on certain parts of the nervous system, or by introducing certain substances into the blood. The parts of the nervous system through which it can be produced may be first considered in order. 1. The cerebellum. Becker (V. Siebold's and Köllicker's *Zeitschrift für Wiss. Zool.*, vol. v. p. 150) found that injury to the posterior part of the pons caused sugar to appear in the urine. Eckhardt himself has not repeated this experiment, but he has exposed the posterior part of the middle lobe of the cerebellum and injured it either by puncture or by the excision of a small superficial portion. Such injuries were followed by diabetes in rabbits but not in dogs. 2. The superior cervical ganglion. Pavy states (*Proceedings of the Royal Society*, 1859, p. 27), that extirpation of this ganglion produces well-marked diabetes in dogs and rabbits. Eckhardt cannot confirm this statement, although he has repeated the experiment many times, especially upon rabbits. He is unable to explain the discrepancy between his results and those of Pavy. 3. The lowest cervical ganglion, the first dorsal ganglion, and the rami vertebrales which run along the vertebral artery and end in the ganglion at the lower part of the neck. In order to prevent misunderstanding, Eckhardt gives a short description of the anatomy of these parts in the rabbit and dog. In the rabbit there is a ganglion just above the subclavian artery. This is termed the ganglion stellatum by Ludwig, Thiry, V. Bezold, and Bever, and it corresponds to the middle cervical ganglion in man. Below this, a little above the first rib or stretching behind it, lies another ganglion, which is often divided into two. It corresponds to the lowest cervical ganglion in man, termed by many anatomists the first dorsel ganglion. Then follow the first, second, and succeeding dorsal ganglia, in the first, second, and following intercostal spaces. In the dog there is a ganglion on the sympathetic trunk above the subclavian artery, which corresponds in its position to the middle cervical ganglion of men and rabbits, and is termed by Cyon and Aladoff the last cervical ganglion. Another ganglion, which these authors call the first dorsal or ganglion stellatum, lies behind the first rib, and projects into the first intercostal space, and is connected with the previous one by two fibres, which pass one on each side of the subclavian artery, and form the annulus of Vieussens. It is thus evident that the expression "ganglion stellatum," as used by different authors, does not

refer to the same ganglion in the dog and rabbit. Eckhardt himself avoids it altogether. Perhaps it may be possible, by careful dissection, to distinguish several ganglia in the stellate ganglionic mass of the dog, so as to render the analogy complete between it and the nervous disposition in the rabbit. Into this ganglion in the dog enter the two fibres of the annulus of Vieussens, and also the vertebral branches which lie close to the vertebral artery. (On this point Eckhart recommends a comparison of the differences between the statements he makes in his *Beiträge*, vol. vii. p. 16, and those of Cyon and Aladoff.)

The following experiments have been made on the parts already mentioned, with the following results. Eckhardt himself first observed that, in rabbits, a distinct diabetes was produced by a cut into the last cervical, or first or second dorsal ganglion. In no case did he observe an increase in the amount of urine accompany the appearance of sugar. No distinct diabetes was observed when the fibres connecting the ganglia were divided, instead of cutting into the ganglia themselves. He has only once performed a similar experiment in dogs. It consisted in mechanical irritation of the first thoracic ganglion, which was followed by diabetes. He has never operated upon the ganglion which lies above the subclavian artery. He mentions this expressly, because it appears to him that he has been misunderstood upon this point. Cyon and Aladoff have incised and excised the lowest cervical and ganglion stellatum in the dog, and have found diabetes in all cases. They have also divided the annulus of Vieussens and the vertebral branches, and, after doing so, they have generally observed diabetes. Eckhardt has also divided the vertebral branches, but has never obtained a positive result. He has no idea regarding the cause of the difference between the results of such a simple experiment.

4. The splanchnic in the abdominal cavity. It was stated several years ago that simple division of this nerve induced diabetes. In the old experiments to which Eckhardt refers, the nerve was either divided subcutaneously in the thoracic cavity, or the method of cutting it was not described, Eckhardt has not repeated the experiments in this form, because he does not consider that one is justified in assuming that the ganglia of the sympathetic cord have no influence over the result; and this is tacitly done when the sympathetic is divided subcutaneously in the thorax, as it is then impossible to be sufficiently certain that the ganglia have not been injured. He therefore caused Plock to expose the splanchnic after its passage through the diaphragm into the abdomen, and divide it at this point where it is free from ganglia. The results of this experiment were uncertain, as sometimes diabetes occurred, but generally it did not. On repeating it himself Eckhardt never found true diabetes either in rabbits or dogs.

5. The cœliac ganglion. Extirpation of this ganglion was stated by Munk to cause diabetes, but Eckhardt finds that it very rarely does so. He has himself shown that operations on the abdomen sometimes cause diabetes, although no particular nerve has been injured, and believes that in these cases, where Munk would have observed it, it would have occurred if the other parts of the operation had been done and the ganglion itself left uninjured.

Another way of producing diabetes is by introducing various substances into the body instead of injuring parts of the nervous system. Curare was shown by Bernard to have the power of doing this, but Eckhardt finds that it only does so when artificial respiration is kept up sufficiently long to allow the animal to begin to recover. If it is stopped too soon or if the animal is kept completely paralyzed, diabetes does not occur. The inhalation of carbonic oxide produces diabetes in the dog, but not in the rabbit. Hydruria or increased secretion of urine appears in the dog along with the diabetes. Its amount and duration vary in different animals, but it generally lasts several hours. For three to ten minutes before the sugar appears and secretion of urine begins to increase, it is much diminished, or stops altogether. The same thing is noticed when diabetes is produced by puncture of the floor of the fourth ventricle.

A third method consists in the injection of solutions of salts directly into the circulation. The injection of a 1 per cent. solution of common salt never produces it in the dog and only rarely in rabbits. It greatly increases, however,

the quantity of urine, and when sugar appears in the rabbit's urine a certain substance is found in it which reduces Fehling's solution but only at a higher temperature than sugar, and has no action on polarized light. The injection of carbonate, acetate, succinate, or valerianate of soda also produces diabetes in the rabbit. Only traces of diabetes can be obtained in the dog by the injection of acetate of soda. Division of the splanchnics before the injection prevents the appearance, or reduces to a minimum, of sugar or the other substance in the urine of rabbits, but the quantity of urine remains large. Eckhardt is inclined to ascribe the diabetes found by Tieffenbach after ligature of the abdominal aorta to the mere fact of its being an operation on the abdominal cavity.

In discussing hydruria or increased secretion of urine Eckhardt distinguishes between pure hydruria or that without diabetes, and that which is accompanied by it. The former sort appears in two forms. It either attains a certain but always moderate height in a short time, and remains at it for some time without any considerable variations, or it rapidly increases to a great extent, and then sinks rapidly again. The first form has hitherto been produced only by section of the splanchnics in the abdomen. Division of this nerve only increases the secretion from the kidney on the same side in the dog, and does not increase it at all in the rabbit. The increased secretion is probably due to the dilatation of the renal vessels which was shown by Ludwig and Thiry to be a consequence of section of the splanchnics. Eckhardt has been unable to confirm Bernard's statement that irritation of the vagus increases the secretion of urine, but agrees with him that irritation of the peripheral end of the divided splanchnic arrests secretion. He attributes this to contraction and closure of the renal vessels induced by the irritated nerve. The movements of the ureters are unaffected by the irritation. The second form of pure hydruria has not been so well investigated as the first, but it is much more interesting, as it agrees much more closely in the great quantity of urine secreted with the ordinary symptoms observed in man.

It may be produced, as Bernard has shown, by puncture of the fourth ventricle, but Eckhardt could not, like him, find a point the puncture of which invariably produced hydruria without sugar. It is quite true that one sometimes gets the result observed by Bernard after puncture of the fourth ventricle, but it is not always necessary to touch the point mentioned by him, as hydruria may be produced by puncture of other spots in the neighbourhood, and sometimes when injury to that point produced hydruria with sugar instead of hydruria alone. When increased secretion alone is obtained it is always very great, but it does not last long. It is sometimes as much as eight or ten times greater than normal, while the increase after section of the splanchnics is generally only about double the normal. Eckhardt has also found that after touching the posterior part of the middle lobe of the cerebellum in rabbits with a 1.7 per cent. solution of potash or chloride of iron, hydruria appears lasting for less than two hours, and generally unaccompanied by sugar. Sometimes sugar appears in the urine also, but Eckhardt has succeeded in getting pure hydruria by dividing the nerves of the liver before injuring the cerebellum. Pure hydruria may also be caused by the injection of a 1 per cent. solution of common salt into the veins of a dog. The secretion increases very rapidly, and then quickly afterwards begins to fall with many oscillations. The increase is more marked when the splanchnic had been previously divided. If the injection of salt solution is continued, the secretion of urine is permanently increased. It is to be remarked that all means which produce the second kind of hydruria, either without or with sugar, continue to act after division of the splanchnics, and the increased secretion can be arrested by irritation of the peripheral extremity of the splanchnic.

As diabetes may occur without any increase whatever in the amount of urine —*e. g.*, in the rabbit—after injury to the ganglia already mentioned, and sometimes after puncture of the fourth ventricle, one would fancy, *à priori*, that it might be associated with one form of hydruria as well as another. But experiment shows that this is not the case, for diabetes is never associated with splanchnic-hydruria, but only with the other form.

In regard to the causes of hydruria, Eckhardt looks upon that which occurs after section of the splanchnic as due to increased flow of blood through the

renal vessels, induced by their paralysis after the division of their vaso-motor nerves. Arrest of the secretion by irritation of the splanchnics is due to contraction of the vessels. The cause of the other kind of hydruria is doubtful, but it does seem to be due to raised blood-pressure and increased filtration from the kidney. When hydruria is produced in rabbits by injury to the cerebellum, the blood-pressure is not increased, and the secretion of urine is also greatly increased by the injection of a quantity of salt solution, which has not much influence on the blood-pressure. Eckhardt acknowledges that the blood-pressure in the aorta gives no indication of the pressure in the vessels concerned in the secretion of urine, but he considers it unlikely that such an equalization should take place between them and those of other parts of the body as to leave the pressure in the aorta unchanged. He, therefore, thinks that certain parts of the kidney increase the secretion from the blood, but whether it is the vessels of cells is uncertain. The second kind of paralysis, however, must be due to irritation and not to paralysis, as it would then be constant as after section of the splanchnic.

The cause of diabetes Eckhard thinks is still less clear. Sugar may be formed either in the liver or muscles. Its increased formation in diabetes probably takes place in the liver, for puncture of the fourth ventricle does not produce diabetes in frogs after removal of the liver, nor are those injuries to the encephalon in rabbits, which usually cause diabetes in rabbits, followed by it if the splanchnics have been cut. Injury to the middle lobe of the cerebellum also, which usually produces both hydruria and diabetes, was only followed by hydruria, if all the nerves of the liver had been previously cut. People have been satisfied by saying that the vessels of the liver were paralyzed; but the facts on which this statement rests are disputed by Eckhardt, and he considers it opposed by the fact that the diabetes caused by operations soon passes off. Even if it were true, he does not see that the occurrence of diabetes is thereby explained.—*London Med. Record*, Oct. 22, 1873.

14. *Fatal Embolism by Fat.*—Prof. Bergmann, of Dorpat, contributes to the *Berliner Klinische Wochenschrift* (No. 33, Aug. 18, 1873) a case of fracture of the thigh which proved rapidly fatal, and in which the diagnosis made *intra vitam*, and verified at the necropsy, was embolism of the pulmonary capillaries by fat or oil.

This peculiar pathological condition was first described by E. Wagner, and its occurrence has since been frequently confirmed. At the time of its discovery the present author investigated the subject experimentally, and found that oil injected into the veins of animals will cause, according to the amount, either—1. Instant death by complete arrest of the pulmonary circulation; or 2. Death in six hours or less preceded by dyspnœa and hæmoptysis; or 3. No effect whatever, the oil passing through the lungs, and being found, when the animal was killed, either in the liver or in the kidneys and urine. From these experiments Bergmann concluded that it was improbable that such a large amount of fat could at one time enter the veins of a living man, as to cause serious symptoms. He now confesses that in this view he was quite mistaken, as was proved by an observation made in A. Wagner's clinic, and by an investigation undertaken thereupon by Busch. A patient suffering from fracture of the tibia speedily died of coma preceded by increasing debility; and the microscope revealed, in the capillaries and small arteries of every part of the body, large numbers of arborescent fat-drops perfectly clear and uncoloured. Busch's investigation took the form of a demonstration that the source of the oil in such a case is undoubtedly the fat of the medullary canal of the fractured bone, for he found in the lungs drops of cinnabar-coloured oil which he had injected into the medullary canal.

The case which Bergmann now reports resembles that of Wagner just given, and is even more complete. A man fell from a roof and fractured his right thigh. The lungs were examined at the time of his admission, and found to be perfectly healthy. On the evening of the next day he became restless, and required a hypnotic. On the third day he was worse and feverish, and that night he suddenly began to spit blood rather freely. On the fourth day

there were marked dyspnœa, lividity, incessant cough with bloody frothy expectoration, fine râles first over the left and then over the right lung, and a temperature of 103.3°. The dyspnœa increased, and the patient died that night, seventy-eight hours after the accident.

Post-mortem, the right femur was found to be fractured in many pieces. One large portion, more than five inches long, was completely separated and considerably displaced. Into the upper fragment, also, there ran a long fissure communicating with the medullary cavity. The medulla of the broken portion of bone was reduced to a pulp, infiltrated with blood, and softened for some distance beyond. The large vessels of the limb were uninjured, but there was very extensive extravasation of blood among the muscles, evidently from rupture of the perforating arteries and from the medulla. When the fracture was carefully exposed, the blood which collected at the spot visibly contained oil-drops. There was no fracture of the ribs. The bronchia, trachea, and larynx were filled with bloody froth. The lower lobes of both lungs were deeply congested, and the lungs were found on section to be filled with minute but true hemorrhagic infarcts. The microscopical examination was exceedingly interesting. Almost on every section of the lungs the unmistakable appearance presented itself, of fat-drops characteristically arranged within the capillaries and smaller arteries. At one place there would be seen simply an elongated drop, at another a complex network as if the oil had been directly injected, and at still other places the drops appeared free.

This is the only case hitherto recorded in which embolism by fat seems to have proved fatal purely by pulmonary œdema. When the vessels of the brain are affected, the surgeon cannot come to a positive diagnosis, as the symptoms may be due to direct injury to the head; and, conversely, it is probable that the death of many such patients has been referred to direct cerebral injury, when it was really caused by embolism by fat. But when pulmonary œdema is demonstrably present, as in the case before recorded, after severe fracture of a bone, there is, at least, a possibility of the diagnosis of fatty embolism being made with accuracy.—*London Medical Record*, Sept. 10, 1873.

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15. *Embolism by Fat.*—Professor EBERTH, of Zürich, made, in the Section of Pathological Anatomy of the German Association for the Advancement of Science, a short but important communication on Embolism by Fat, which has lately excited fresh interest among pathologists. Eberth finds a source of the fatty-embolus in breaking down coagula in the heart. If the coagula occur in the right side of the heart, embolism of the pulmonary capillaries results, and severe dyspnœa should the condition be at all extensively distributed. Fresh coagula form upon the broken surfaces of the older ones in the heart, and these undergoing in their turn fatty degeneration, a great part of the pulmonary capillaries are filled with fatty emboli.—*Med. Times and Gaz.*, Oct. 11, 1873.

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16. *Inflammation of the Thoracic Canal.*—Dr. CHOUPPE, of Paris, has just published a thesis in which he has collected five cases of the above rare and, as yet, not well-known affection. The five cases collected by Dr. Chouppe are the only ones hitherto placed on record. In three of the cases the inflammation was secondary, and in two primary. In order to distinguish this latter form from the former, Dr. Chouppe has conducted a series of experiments on animals. The points brought out by the two cases and by the author's experiments are very interesting. In both cases the inflamed thoracic canal had thrown a quantity of pus into the general circulation through the subclavian vein, and it might be said that the patients had had a sort of pyæmia through an internal course; yet, during life, typhoid fever, meningitis, and articular rheumatism were successfully suspected, whilst purulent infection was not even thought of. Another point of interest was the obliteration of the subclavian vein in one of the cases; it could only, however, have occurred during a late period of the disease, as symptoms of pus in the blood had been previously observed. Notwithstanding the great importance of the thoracic canal, as conveying all the chyle produced by digestion, and the most part of lymph, no disturbance in the digestive organs or in the functions of nutrition was

observed. Moreover, Dr. Chouppe stated the existence of pulmonary infarctus, caused, according to him, by the pus-producing embolisms. The other symptoms were redness of the surface in various parts, inflammation of the sheaths of tendons, and of several joints. In both primary cases the onset of the disease was sudden; in one case it came on with violent pain in the stomach and intense fear; in the other with a violent and protracted fit of rigour. In the two cases these symptoms were followed by high fever, prostration, loss of strength and flesh.

Dr. Chouppe has arrived at the following conclusions on the important question which he has investigated: Primary inflammation of the thoracic canal does exist; it is attended by general symptoms of purulent infection and by local symptoms; it cannot be diagnosed as yet during life by the help of known symptoms, but its presence may be suspected; it is likely that it has been sometimes overlooked, and that it occurs occasionally.—*Lancet*, Sept. 20, 1873.

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17. *Pathological Changes in Relapsing Fever.*—Dr. Ponfick, of Berlin, read before the section of Pathological Anatomy of the German Association for the Advancement of Science, etc., a paper on this subject. A very large number of post-mortem examinations were made in the Pathological Institute at Berlin during the late severe epidemic of the disease, but only a few of the most striking changes would be described on this occasion. Most of the patients died of pneumonia, with abundant exudation. This was a mere complication, but remarkable nevertheless from its frequency, and from the disease having been usually developed in the hospital without evident external cause. The spleen presented at times very considerable alterations. In about a half of the cases it was swollen, sometimes extremely so. In other cases there was infarction of the organ, very much as in endocarditis, the form and true characters of the infarct being present, without any alteration in the heart or thrombus in the veins, except in a single case. Ponfick would refer this infarction, therefore, to a local cause. The condition may advance, adhesions form, ulcerations take place, and even perforation of the diaphragm may be found. In one case the splenic swelling ended in rupture and fatal hemorrhage. A third alteration found in the spleen in some of the cases was the appearance of a number of small yellowish-white points and streaks—altered Malpighian bodies. In these spleens there were found with the microscope enormous granular cells, as in other diseases of the same organ. They could also be discovered in the bloodvessels throughout the body, sometimes in great numbers, as very large nucleated cells. Some of these were probably endothelial cells, but others were so characteristic that there could be no question of their splenic origin. Besides these cells, the bodies discovered and described by Obermeyer were found in the blood. The medulla of the bones was examined in fifteen cases, and in four of these definite appearances were observed—namely, hemorrhagic infarcts passing into yellow masses.—*Med. Times and Gaz.*, Oct. 11, 1873.

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18. *Researches on Erysipelas.*—M. J. Orth shows that erysipelas may be transmitted from one individual to another by inoculation of the blood or of the fluids discharged from the erysipelatous skin. These fluids contain characteristic bacteria (microsphacra) which, cultivated, retain the power of inducing erysipelas. But on the other hand, the destruction of these bacteria only diminishes but does not destroy the infecting power of the fluids discharged from erysipelatous parts.—*Rev. des Sciences Médicales*, Oct. 1873, from *Archiv für experimentelle Pathologie und Pharmakologie*, April, 1873.

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19. *Physiological Researches on the Nature of Cholera.*—Dr. Brunton, in a paper read before the British Association for the Advancement of Science, expressed his belief that the search after a true remedy for cholera had hitherto been fruitless. The cause of the disease was now generally admitted to be a poison of some sort which could be transmitted from one person to another, but there must also be a proper soil for the development of the poison—in

other words, the blood and the tissues must be in such a state that it can act upon them. In the state of collapse there was constant vomiting and purging, and the intestinal canal was speedily washed clean out, the stools consisting of the secretion alone; the blood stagnated in the great veins of the thorax and abdomen, and left the skin shrunken, pale, and cold, the interior of the body being hotter even than in a state of high fever. The blood which filled the small cutaneous veins, being no longer driven forward by fresh supplies from the arteries, became completely deoxidized and black, imparting to the surface a livid hue. It still retained its power to take up oxygen and give off carbonic acid; but notwithstanding this, it passed so slowly through the pulmonary vessels that only about one-third of the usual quantity of carbonic acid was given off from the lungs, and little oxygen being taken in, there was a distressing feeling of want of breath. At the same time the voice was hoarse, low, and weak; but this seemed to be simply a consequence of the general exhaustion of the patient. The symptoms of cholera all arose from the disturbance of the circulation and the altered intestinal secretion, and it might be thought that the only way to remove those conditions would be to eliminate from the body the poison which was producing these effects, and that so long as it was still circulating in the blood any remedy which was simply intended to counteract it would be administered in vain. But the researches of Fraser and others on antagonism had shown that the elimination of a poison was not required in order to prevent its injurious or fatal action. The administration of an antidote would deprive it of its hurtful power; and as it was with other poisons so might it be with that of cholera. It occurred to Dr. Brunton that, if any poison should possess actions similar to those of the cholera poison, an antidote to it might possibly prove to be a remedy for cholera. He therefore began to look for a drug which would produce the same changes in the circulation which occurred in cholera. These were, he believed, first attributed by Dr. Parkes to spasmodic contraction of the vessels in the lung, which prevented the blood from passing through them; and this opinion found a warm supporter in Dr. George Johnson. Most of the symptoms, though not all, could be explained on this hypothesis. Professor Schmiedeberg, in investigating the physiological action of poisonous mushroom, the *Amanita muscaria* or *Agaricus muscarius*, noticed that when given to animals it caused great dyspnœa, and at the same time the arteries became empty, so that when cut across hardly a drop of blood issued from them, this being the condition which existed in cholera. Administering atropia to the warm-blooded animals suffering from these symptoms, Professor Schmiedeberg found that they at once recovered; but he had not thought at all of contraction of the pulmonary vessels as a cause of dyspnœa. He attributed it rather to excitement of the nervous centre in the medulla oblongata, which regulates the respiratory movements; and the effect of atropia itself being to excite the nervous centre, it ought, according to his supposition, to have increased instead of removing the breathlessness. When the idea that the dyspnœa was due to contraction of the pulmonary capillaries suggested itself to Dr. Brunton, he proceeded to test it by experiment. He first gave a rabbit such a dose of chloral hydrate as to deprive it of all sensibility, then put a tube into the windpipe, and connected it with a pair of bellows. He was thus able to inflate the animal's lungs at regular intervals and keep up respiration artificially when the animal could no longer breathe itself. He next opened the thoracic cavity so as to observe the slightest change in the lungs or heart. He injected a little muscarin into the jugular vein, when the lungs which had been previously rosy, became blanched; the right side of the heart swelled up, the veins passing to it became enormously distended, and the left side of the heart became almost empty. Shortly afterwards he injected a little atropia into the jugular vein. At once the effects of the muscarin disappeared, and everything assumed its normal appearance. From the want of muscarin he had not pursued his investigation, but hoped shortly to do so Hitherto he had proceeded on the assumption that Dr. Parkes' and Johnson's theory of cholera was correct, and that the stoppage of the circulation is due in cholera, as in muscarin poisoning, to contraction of the arteries of the lungs. In poisoning by muscarin the great veins of the thorax and abdomen

and the right side of the heart seemed to be almost equally distended, and exactly the same condition was found in persons who had died of cholera. But it was not certain that the right side of the heart was always so much distended during life, even when the symptoms of cholera were present in their most pronounced form. It would almost seem that the veins dilated still more in cholera collapse than they did in muscarin poisoning. Nitrite of amyl has the power of dilating the arteries throughout the body, and those of the lungs also. But it was found practically to be of no use in cholera. The pulse might become a little stronger and the surface a little warmer, but the improvement was so slight that it was hardly worth mentioning, and the patient felt no better for the medicine either when inhaled or when injected subcutaneously. If the weakness of the pulse depended only on contraction of the vessels in the lungs, this result would be astonishing; but if they supposed it to be caused by dilatation of the great veins, it was just what they would expect. From these and other facts Dr. Brunton concluded that the veins were dilated, and that, therefore, some remedy must be employed which would make them contract. There had been few experiments on the contractility of the veins, but in the condition of depression or shock following severe injuries in which the veins were much dilated, digitalis had been found useful, and it might be found useful in cholera also. Atropia had been lately tried in cholera by an American practitioner with considerable success, and it seemed deserving of more extensive trial. It would not do, however, to consider the action of any proposed remedy for cholera on the circulation alone, and to leave out of account its effect upon the intestinal secretions. He therefore set to work to discover the action of atropia upon those secretions. Since the effect of cholera upon the intestine was the same as that of division of the nerves, which was one cause of secretion, they were justified in believing that if any drug could stop the secretion in the experiment of dividing the nerves it was likely to have a similar effect on cholera. Now, atropia had a remarkable power to stop secretion from the salivary and sweat glands when their nerves were irritated, rendering the mouth and skin quite dry. What its effect on paralytic secretion in the salivary glands might be he did not know, but thinking that it might arrest the flow of fluid into the intestine he repeated Moreau's experiment, and injected some solution of atropia into the veins of an animal. The result was disappointing, and rendered the use of atropia in cholera somewhat doubtful. It was, however, difficult to foretell the effect of any drug under particular circumstances, and he should therefore continue his experiments. The points to which he wished to direct particular attention were these: (1) That, assuming Parkes' and Johnson's theory to be correct, and the impeded circulation in cholera to be due to obstruction in the pulmonary vessels, atropia was likely to prove beneficial to a certain extent; and since it had been empirically found to be useful in the disease, it ought to receive a fair trial at the hands of the medical profession. (2) The fact that the right side of the heart was not dilated during life in cholera patients, as well as the uselessness of nitrite of amyl, which dilated the pulmonary vessels, showed that Parkes' and Johnson's theory, if not erroneous, was at least imperfect, and that one of the important pathological conditions in cholera collapse consisted in an active dilatation of the thoracic and abdominal veins. Any remedy, to be useful in cholera, must have the power of counteracting the condition; and the administration of digitalis in cholera collapse might be useful. (3) The profuse secretion from the bowels in cholera was due to paralysis of some of the intestinal nerves; and a remedy which will arrest it is still a desideratum.—*Med. Times and Gaz.*, October 11, 1873.

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20. *Abscess of the Larynx simulating Croup.*—Dr. Wm. Stephenson narrates (*Edin. Med. Journ.*, October, 1873) six cases of suppuration in the neighbourhood of the larynx: three belonging to Dr. Stephenson, one to Rilliet and Barthez, and two to Dr. Parry (*Philadelphia Med. Times*, June 14, 1873). All the patients were children; in age varying between nine weeks and four years and a half. The most striking symptoms are those present in all cases of acute glottidean obstruction; laboured stridulous breathing, and hoarse cough. Hence

the disease in question strongly resembles croup. Yet in laryngeal abscess these glottidean symptoms are not usually so rapid in development, and in reaching the point of suffocation, as is the case with true croup. In one child the laryngeal dyspnœa lasted two weeks. Usually the patient breathes most easily in an erect posture. Besides dyspnœa, dysphagia was present in all cases but one; this is a symptom which recalls retropharyngeal abscess. But the dysphagia does not seem to have been so great in the laryngeal as it is in the pharyngeal abscess; he finds no mention of return of fluids through the nose. Sooner or later, a deep-seated swelling may be detected in front, or at the side, of the thyroid cartilage. When this is opened, pus escapes. At *post-mortem* examinations pus was found spreading upwards along one or both sides of the thyroid cartilage to the parts above the rima glottidis. In four cases the suppuration about the larynx was preceded by inflammation of the lymphatic glands under the jaw and down the neck; in two cases it is not mentioned whether these glands are inflamed or not. The lymphadenitis in one child was secondary to scarlet fever, in another to smallpox, in a third to erysipelas, and in one was idiopathic. In this respect also laryngeal abscess resembles retropharyngeal abscess, which is probably due to a retropharyngeal lymphadenitis, when not due to disease of the vertebræ. The treatment is obvious, to open the abscess as soon as it can be detected in the neck. In three patients this was done, two recovered and one died.—*London Medical Record*, Dec. 3, 1873.

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21. *Artificial Production of Tuberculosis.*—Dr. E. KLEBS, from experiments made on guinea-pigs, endeavours to throw light on the question of the injurious property of milk from tuberculous cows. He concludes that the use of such milk always produces tuberculosis, commencing in the mesenteric glands, and then invading the liver and spleen, and subsequently the lungs. The tuberculous virus exists in the milk of cows which are slightly as well as gravely affected. It seems to reside in the serum of the milk, and cooking does not destroy it.—*Revue des Science Méd.*, Oct. 1873, from *Archiv für experimentalle Path. und Pharm.*, April, 1873.

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22. *Addison's Disease without Bronze Discolouration of the Skin.*—Dr. M. A. LEVERAU communicates to the *Gazette Hebdomadaire de Méd. et de Chirurg.* (Sept. 19, 1873) two cases of this, one occurring under his observation in Military Hospital Saint Martin, and the other in the practice of Dr. Kelsch, observed in the Military Hospital of Strasbourg. He draws the conclusions from these cases, as well as from analogous cases related by different authors, that—1st, the bronze discolouration of the skin is not constant in Addison's disease; and, 2d, that the existence of the disease may be diagnosticated, in the absence of the bronze discolouration, by the extreme asthenia and the uncontrollable bilious vomiting with which the subjects of it are affected.

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23. *Case of Blue Chromidrosis.*—Dr. A. W. FOOT communicated to the Med. Soc. Coll. Phys. Ir., Nov. 20th, a genuine case of this in a young lady æt. 17, small for her age, with brown hair and eyes, of an habitually high complexion, nervous, predisposed to blush, sensitive, quick, and excitable, and who had applied herself too closely to her studies. The coloured exudation affected principally the forehead and temples, it also appeared beneath the eyes, on the side of the nose, on the chin, and on the back of one hand. The blue discolouration continued to appear for a period of six months, but it is now more than three years since it was last seen.

Dr. F. ascribes the colouration of the skin in a majority of these cases to the formation of various kinds of indigo upon the outer surface of the skin; that these indigoes result from the oxidation, in various degrees, of the colourless indican, which is known to exist in the blood under many conditions, and in varying quantities, and which forms a very frequent constituent of urine, and of suppurations, and has also been found in milk. The indican, soluble in the alkaline liquor sanguinis, transudes at the thinnest and most vascular cutaneous territories, and when on the outer surface of the integument, it becomes

exposed to the oxidizing influences of air, light, and heat, it is susceptible of forming indigo-blue, indigo-brown, or indigo-red, according to different circumstances.—*Irish Hosp. Gazette*, Dec. 1, 1873.

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24. *Vaccinal Syphilis.*—Dr. Tilbury Fox (*Lancet*, Nov. 8, 1873) announces himself as a believer in the occurrence of true vaccinal syphilis, having been satisfied clinically that it does occur. "At the same time," he says, "I am quite sure that very many cases to which this designation is applied are in reality only instances of latent hereditary syphilis excited by the vaccination, and in which the vaccination cannot in any way be fairly blamed for the occurrence of the syphilis. The cases which simulate true vaccinal syphilis are, however, often very successful counterfeits; and a difficulty in disproving that the vaccination itself conveys the syphilitic poison to the attacked arises oftentimes from the inability to get at any history of syphilis in the parent or parents. The latter naturally try to shift upon vaccination the blame which they should bear themselves."

He relates a case which illustrates some of these points in a very admirable manner. It counterfeited vaccinal syphilis; but careful inquiry elicited the fact that the child had no doubt been fully syphilized before it had been vaccinated, and that the vaccination only *excited* the outbreak of the eruption. The father blamed the vaccination, conveniently as it turned out; for no doubt he had infected his wife just after marriage with syphilis.

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25. *Atrophy and Softening of the Skeleton.*—Prof. R. W. Smith, at a late meeting of the Dublin Pathological Society (*Dublin Journ. of Med. Sci.*, Nov. 1873), detailed the following remarkable case, and exhibited the remains of the skeleton.

An unmarried female, forty years of age at the period of her decease, was admitted into one of the District Lunatic Asylums, in May, 1858, having been a short time before committed to prison as a dangerous lunatic. Nothing could be ascertained of her previous history. For a period of ten years after her admission she was able to go about, and did whatever work was assigned to her, such as sweeping rooms, washing floors, etc., and during the whole of that time made no complaint of illness or weakness of any kind.

Five years ago, however, she began to walk lame, but still made no complaint; her appetite was always good, and she rested well at night. She ceased to be able to work, and become bed-ridden for the remaining five years of her life, gradually becoming more and more enfeebled, and dwindling away in stature, until she was reduced to about two-thirds of her former height. She usually lay, during the latter portion of her wretched existence, with her head resting upon her knees. The thorax became excessively deformed, in consequence of an almost endless number of fractures of the ribs, and the thighs were bent in different directions and curiously coiled up, the bones having given way in several places. The same remarks apply to the condition of the pelvis. She died in the beginning of 1872, seemingly worn out by the obscure constitutional effects of so universal a degeneration of the osseous system.

The examination of the body proved to be most interesting, but also most laborious. The state of the internal organs may be disposed of in a few words. None of them presented any abnormal appearance worth alluding to, except the uterus, with which a few small fibrous tumours were connected. The muscles were of a pale colour, soft and flabby. With respect to the condition of the bones, it may be stated, in general terms, they were atrophied, extremely light and extremely fragile, and their interior contained a grumous, semi-fluid, greasy matter, not unlike that observed in them in the second stage of rickets as it occurs in children. The number of fractures which existed was prodigious: the ribs alone had been broken into more than one hundred fragments. The atrophied lower jaw was in three pieces; the bones of the pelvis and the thigh bones had given way in more than twenty places; the neck of each femur was broken. The scapulæ, clavicles, etc., were likewise broken; altogether, there were near two hundred fractures. The vertebræ were greatly atrophied, much diminished

in vertical extent, and deeply excavated in front. The base of the skull and the bones of the face were cribriform, more especially the former.

The bones (when dried) were carefully weighed, with the following result: Cranium, 9½ oz. Tibiæ and fibulæ, 9½ oz. and 1 drachm. Bones of arms and forearms, 5 oz. and ¾ drachm. Sternum, ½ oz. Clavicles, 1 drachm. Pelvis, 2¾ oz. Vertebræ, 4½ oz. Lower jaw, ½ oz. and 2 scruples. Femora, 4 oz. and 2 drachms. Patellæ, 3 drachms. Ribs, 1 oz. and 3 drachms. Scapulæ, 1 oz.

The total weight of the skeleton was about 2½ pounds, which may be set down as one-fourth of the weight of a large child at birth. Professor Smith, having alluded to the writings of Trousseau and others, respecting the identity of mollities ossium and rickets *in the adult*, and to the observations of Otto, Marchand, Beylard, etc., stated that, as it was his intention to publish a memoir upon the subject, he would not longer occupy the time of the meeting upon the present occasion.

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26. *Croton-Chloral Hydrat in Neuralgia.*—Mr. BENSON BAKER extols (*Brit. Med. Journ.*, October 25, 1873) the efficiency of this drug, and in evidence he relates the following cases:—

A. suffered from facial neuralgia of a most severe character; it affected her hearing and eyesight. She could not rest or take food. She took one grain of croton-chloral hydrat every hour. In three hours she was considerably better. After taking three more doses she was entirely free from pain.

B. suffered much from facial neuralgia dependent on decayed teeth, and had not been able to take food or sleep for three days. She was ordered croton-chloral hydrat in grain doses every hour, and obtained great relief after two doses. Six doses removed the pain completely. She slept that night.

C. This patient suffered from concussion of the spine caused by a railway accident some years ago. She has had every variety of treatment for the pain she suffers in the spine and the nerves proceeding therefrom. She took potassium bromide gr. 20, and croton-chloral hydrat gr. 1, three times a day, with marked relief and no bad symptoms.

E. This is a young dyspeptic and neuralgic patient, and suffers greatly from dysmenorrhœa. She took two-grain doses when the paroxysm of pain came on, with marked relief.

F. has been under treatment for various neuralgiæ for some years. She has had, at one time or other, almost every external and internal therapeutic agent in the *Pharmacopœia*—strychnia, iron, quinia, ammonium chloride, aconite, belladonna, iodine, bromine, blisters, hypodermic injections, galvanism, together with baths and other hygienic appliances, including change of air. In this case two-grain doses of croton-chloral hydrat every hour afforded more speedy relief from pain than any of the above remedies. After taking eight grains she was almost free from pain.

In thirteen patients who have taken croton-chloral hydrat, not a single bad symptom has been observed. In grain doses it relieves pain quickly, causes natural sleep, no subsequent headache or furred tongue. In several cases it acted as a gentle laxative.

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27. *Spasmodic Asthma treated by Chloral.*—Dr. THEODORE WILLIAMS related to the Clinical Society (Oct. 10) three cases. The first was that of a married woman, aged 23, who came from the Isle of Man, where, during the last nine months, she had suffered from asthma of so severe a character as to confine her to her bedroom for four months. Various remedies had been tried in vain. On her arrival in town, Dr. Williams did not at first pursue active treatment, hoping that the change of climate might give relief. The fit, however, coming on as usual, chloral was given in twenty-grain doses. After the first dose, she fell asleep for an hour; after the second, she slept a whole night; and a few more rendered her breathing quite clear. The drug was then omitted, and the patient remained free from asthma for more than a week. The second case is that of a lad, aged 16, who has been subject for six years to attacks occurring once a week and lasting three days. Chloral was given during a severe paroxysm, with the result of causing sleep and immediate relief to the breath-

ing. He remained in the Brompton Hospital free from attacks, in spite of several threatenings of dyspnœa, which were always averted by the timely administration of chloral. The third patient was an unmarried woman, aged 27, with a history of asthma of two years' standing; the attacks occurring every morning, lasting two or three hours, and often recurring in the forenoon. During a very severe one, which occurred in the Bromptom Hospital, a variety of drugs were tried with little effect. Chloroform inhalation gave some relief, but caused cardiac intermission. Hypodermic injection of morphia did good, but her increasing lividity precluded its continuance. Chloral was then given in twenty-grain doses, and the first dose induced slumber and easy respiration. The drug was continued in smaller doses for upwards of two months, during which time the attacks seldom recurred, and, when they did so, were extremely mild. Once the chloral was omitted, and the asthma immediately returned, but ceased on resuming it. All the cases were complicated by catarrhal symptoms, and in the third case there was considerable emphysema, which diminished during the patient's stay in the hospital. Biermer, of Zurich, had already used chloral extensively in these cases. Dr. Theodore Williams's own experience, founded on upwards of twenty cases, was decidedly favourable to its use in spasmodic asthma. In only two cases had any bad symptoms arisen.—*Med. Times and Gaz.*, Oct. 25, 1873.

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28. *Atropia in Phthisical Sweating.*—Dr. Frantzel has made an extended series of researches in the Charité Hospital, in Berlin, on the effect of atropia in such cases. In a paper on the subject published in Virchow's *Archiv*, vol. lxviii. part 1 (*Allgemeine Medicin. Central-Zeitung*, August 2), he states that, having given it to seventy-five patients, he has arrived at the conclusion that it is a remedy which he can confidently recommend not only in phthisical sweating, but also in that which attends other diseased conditions, such as acute articular rheumatism and convalescence from trichinosis. Among the 75 patients were 15 cases of more or less recent cheesy pneumonia, of whom all had more or less fever with night-sweats; 48 of distinct pulmonary phthisis, of whom 42 had hectic; 1 of acute articular rheumatism with high fever; 2 of ulcerative endocarditis; and 2 of trichinosis. In the first 15 patients the sweating was in 6 completely arrested, in 7 much diminished; in 2 there was no change. In the 48 phthisical cases the medicine had no effect in 5, in 21 the sweating was remarkably abated, and in 22 it disappeared entirely. Several of the patients in whom the atropia failed were near death when it was given. In the 8 cases of rheumatism, the atropia gave permanent relief in 5; in 2 it produced a marked diminution of the sweats; in 1 it was useless. In one of the cases of ulcerative endocarditis it proved useful; not so in the other. In the two cases of trichinosis the cessation of the acute stage of the disease and of the hectic fever attending it was followed, without any rise of temperature, by profuse night-sweats. Sulphate of atropia, in doses of a milligramme (.015 grain), was given two hours before the expected access of sweating daily, for five days in succession in one case, and for three days in the other; the result being that the sweats entirely disappeared from the first evening when it was given. In one of the cases of rheumatism, in a man aged 32, nearly all the large joints of the upper and lower limbs had been severely affected during five days; the patient was covered with sudamina, and, when seen by Dr. Fräntzel, was bathed in sweat. A milligramme of sulphate of atropia was given immediately, and very soon there was an abatement of the sweating, which in two hours disappeared. It returned in the night, but ceased the next forenoon, after the administration of a similar dose. The atropia was thenceforth given regularly night and morning, with the effect of completely preventing the sweating. The fever lasted fourteen days. In another case of acute articular rheumatism, atropia was given, first in doses of one, then of two milligrammes, with a similar result; and it is remarked that, on two days in the course of the disease on which it was omitted, the sweating returned. The atropia was given according to the following formula: Sulphate of atropia, 6 milligrammes ($\frac{1}{10}$ths of a grain); extract of gentian, sufficient to make ten pills. Dr. Fräntzel has never given larger doses than 1.2 milligramme (a little

less than one-fiftieth of a grain), from fear of producing toxic symptoms. Even doses of 0.6 and 1.2 milligramme, though unattended with any mischief, have produced slight symptoms of poisoning. In not a few cases, after taking the medicine, the patients felt itching in the neck, which, however, disappeared in one or two hours; the pupils not unfrequently acted slowly, and were sometimes dilated; and in some cases there were muscæ volitantes The atropia had to be stopped in four cases on account of diarrhœa; that this was due to the medicine, was proved by the fact that it ceased when the atropia was discontinued, and reappeared when it was resumed. What the physiological action of atropia is in arresting perspiration, Dr. Fräntzel says it is difficult to determine. He is, however, inclined to believe that the profuse sweats arise from relaxation of the walls of the vessels supplied to the sudoriparous glands; and he remarks that the researches of Meuriot, Fleming, Jones, Hayden, and Brown-Séquard have shown that atropia contracts the smallest vessels. To this are to be ascribed both the diminution of sweat and the dryness of the mouth and skin observed in cases of poisoning with belladonna and with atropia. —*Brit. Med. Journ.*, Nov. 29, 1873.

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29. *Administration of Arsenic to Phthisical Sufferers.—L'Union Médicale* sums up Dr. JACCOUD'S experience of the above, as related in the recent publication of his clinical lectures. "Arsenic powerfully ameliorates the nutritive process in chronic pulmonary phthisis. It abates nervous excitement, and possesses a marked antifebrile action, which can combat efficaciously the evening intermittent attack. Dr. Jaccoud exclusively prescribes granules of arsenious acid, containing one milligramme each of the substance ($\frac{1}{65}$ gr.). They are taken at the beginning of the two principal meals. Dr. Jaccoud begins with two granules daily, and every eight days the dose is increased, until it attains from eight to ten a day, which is the maximum dose. This maximum dose is kept on as long as there is no production of acute symptoms, with pseudo-continued fever."—*Lancet*, Nov. 29, 1873.

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30. *Action of Valerian in Diabetes.*—Dr. BOUCHARD, of La Charité Hospital, has been making a trial of valerian in diabetes. In diabetes without sugar the medicament did not seem to diminish the quantity of urine, but azoturia was obviously amended. The quantity of urea discharged in the twenty-four hours was much diminished; it decreased from forty-five grammes (about eleven drachms) to ten grammes (two drachms and a half). The same results were observed in diabetes mellitus. In these cases, when there existed azoturia together with glycosuria, the quantity of urea always diminished under the influence of valerian. In some cases there was less excretion of water and sugar; but these effects seemed uncertain. But decrease in the production of urea was invariable. Valerian therefore prevents denutrition, and may be considered a saving medicament (*médicament d'épargne*). Dr. Bouchard, in respect to this latter quality, quotes the customs of various Indian tribes, among whom the warriors, during a month previous to going out to fight, make use of valerian in every shape—in baths, in frictions, and internally. They ascribe to the substance the strength and courage which they feel in going through long marches, fatigue, and privation of food. This property of valerian has been observed in arsenic and bromide of potassium. Dr. Bouchard commenced with weak doses, which he gradually increased to one ounce of extract of valerian without noticing any inconvenience.—*Lancet*, Nov. 1, 1873.

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31. *Galvanism in Diabetes.*—A diabetic patient, aged 44, under the care of Dr. E. BISCHOFF (*Ærztl. Intelligentzblatt*, 23, 1873, and *Weiner Medizin. Wochenschrift*, August 2d), had for thirty-two days discharged on an average daily 2885 grammes of urine and 24.6 grammes of sugar. In consequence of intercurrent occipital neuralgia, galvanism was applied to the neck. The negative electrode was applied high on the neck, and the positive between the angle of the lower jaw and the mastoid process, then over the supraspinous fossa; and again, the positive pole being retained in the latter position, the negative pole was drawn twelve or fourteen times over the course of the occipital nerve and

the cervical spinous processes; finally, the negative pole was applied alternately in the right and left supraclavicular fossæ, and the positive in the epigastrium and over the liver. This treatment was continued, the application in each place being made for one or two minutes daily, for thirty-two days. The daily quantity of urine became reduced to 2056 grammes, and that of sugar to 11.69 grammes. Two months after the galvanism had been left off, an examination of the urine for fourteen days showed that the quantity discharged daily had risen to 2488 grammes, and that of sugar to 19.87 grammes. On the death of the patient, a year and a half afterwards, there was found to be chronic disease of the vessels in the floor of the fourth ventricle and the neighbouring parts of the brain.—*Brit. Med. Journ.*, Oct. 11, 1873.

32. *Treatment of Salivation by Atropia.*—Dr. W. Ebstein relates, in the *Berliner Klinische Wochenschrift*, for June 23d, the case of a man, aged 68, who had an apoplectiform attack, followed by paralysis of the left half of the body and of the muscles of mastication and deglutition. He had also a constant discharge of saliva, amounting to a pint or more in twenty-four hours. Applying the fact ascertained by Heidenhain, that atropia neutralizes the influence of the chorda tympani on the salivary secretion, Dr. Ebstein gave it in doses of 0.0015 gramme (about the forty-third of a grain). The result was, that the quantity of saliva discharged was reduced to about one-sixth of the amount above mentioned. After the subcutaneous injection of about one-forty-fourth of a grain of atropia over the submaxillary gland on the paralyzed side, the salivation ceased in seven minutes, and did not return for fourteen hours. The same result was produced, but after a longer interval, by injecting solution of atropia into other parts of the body or dropping it on the eye.—*Brit. Med. Journ.*, Oct. 11, 1873.

33. *New Method of Gargling the Larynx.*—Dr. Guinier, of Montpelier, described to the Clinical Society his method of gargling, for which he claims several advantages. Firstly, in the ordinary method expiration is carried on at the same time as the gargling, and prevents the gargled liquid from getting into the larynx. Secondly, the head is thrown back, and, therefore, involuntary deglutition of the liquid occurs. Thirdly, the gargled material, water, or whatever it may be, does not go into the larynx. In Dr. Guinier's method there is no respiration during the process; the head is not moved backwards; voluntary deglutition can be managed during the act; and the gargle bathes the whole of the pharynx, passes beneath the epiglottis to the vestibule of the larynx, to the arytenoid cartilages, to the ventricles of the larynx, and to the true vocal cords, so that if the laryngoscope is used at the same time, and the gargled material is transparent, the vocal cords can be seen shining through it. Dr. Guinier, speaking in French, then stated the chief advantages of his method. He also demonstrated upon himself the different methods of gargling. In the course of his remarks he said, "It is not generally known that the pharynx and uvula are insensible to ordinary touch in every one; nevertheless, such is the case." Certainly his own palate and pharynx seemed to be quite insensible.—*Brit. Med. Journ.*, Nov. 1, 1873.

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY.

34. *Esmarch's Method of Preventing Hemorrhage during Operations.*—This method, recently adopted by Esmarch and introduced into England by Mr. Wm. Mac Cormac, to render operations bloodless, is not exactly new, but was practised by Stromeyer and Langenbeck twenty years ago, and more recently by an Italian surgeon named Silvestri. The details are as follows. An elastic bandage, about two inches and a half in width and from five to ten yards long, is firmly bound round the limb, commencing at the toes or fingers, as the

case may be, and is then continued upwards so as to drive the blood before it out of the veins and arteries. When the desired point has been reached, a strong India-rubber band, about half an inch in diameter, is tightly drawn two or three times round the limb just above the elastic bandage, and fastened by hooks. The bandage is then removed, leaving the tissues blanched and exsanguined. Not a particle of blood is lost during the operation, which is really more bloodless than when performed on the dead subject. After the operation is completed the rubber rope is removed, and the blood then finds its way into the vessels, which are ligatured or twisted according to the taste or inclination of the surgeon. On this plan, which has been carried out at St. Thomas's, Guy's, London, and St. Bartholomew's Hospitals, many operations have now been performed, including excision of the knee and elbow joints, amputations, and the removal of dead bone; and Mr. Wagstaffe has recently amputated through the thigh for gangrene of the foot on this plan, the precaution having been taken to commence the application of the elastic bandage several inches above the mortified part. No ill effects of any kind have hitherto been observed from the use of this contrivance. Although the duration of the operations has varied from a few minutes up to half an hour, and even more, during the whole of which time the circulation has been completely arrested, no evidence has been afforded of the formation of emboli or thrombi in any of the cases. But it is one of the possible evils of the device that the prolonged pressure on the vessels and complete stoppage of circulation may, under certain conditions, lead to the formation of a clot, which, on the re-establishment of the circulation, may be carried along the vessels, and arrested in some part of their course, giving rise to circumscribed inflammations or even gangrene. There is also considerable danger in applying the bandage over parts which are inflamed and suppurating, especially if decomposition be going on, lest some of the clots which are found in the bloodvessels of the affected parts be detached and forced into the blood-current. For such cases it would be well to employ in addition a modification of the plan which has been practised at Edinburgh for the last two or three years, and which consists in suspending the limb for some minutes before the operation, so that the blood may gravitate downwards. Then the bandage may be applied at the proximal side of the diseased part, thus avoiding all risks of septic poisoning or of embolism.

As to the condition of the limb on the removal of the rubber rope, it may be remarked that the blood shows itself at the wound in some cases immediately, and in others not for several seconds, or even a minute afterwards. The part then rapidly becomes very red. of a slightly livid hue, and somewhat swollen; which may be accounted for by the small vessels and capillaries becoming engorged before the *vis a tergo* is sufficiently restored to drive the blood up into the venous column.—*Lancet*, Oct. 11, 1873.

Prof. BILLROTH writes to the *Wiener Medizinische Wochenschrift*, July 19th, that although he did not entertain any doubt as to the truth of Esmarch's observations, he was unable, before he had himself applied the method, fully to realize the complete nature of the local anæmia which might be thus produced. Altogther he had tried it in fourteen cases: two extensive operations on necrosis of the tibia; three resections and extirpations of bone in the foot; two resections of the elbow-joint; two Chopart's amputations; four amputations of the thigh; and one disarticulation of the hip-joint. In twelve of these cases, the result obtained by Esmarch's apparatus was complete and successful. In two cases it was incomplete, for the following reasons: In one instance a large cicatrix on the back of the knee, following a burn, had bent the knee to a right angle with the leg, and hindered the India-rubber band from exercising efficient circular compression; the smaller vessels were closed, but the main artery required to be compressed in the groin; some blood also flowed from the distal vessels. The imperfection might have been remedied by placing a pad in the popliteal space, or, perhaps, applying the compression a little higher up the limb. The second case where the compression was incomplete, was one of disarticulation of the femur, under somewhat peculiar circumstances. A man, aged forty-five, worn out by excess in drink, had an amputation of the thigh performed on account of disease in the knee-joint. The patient survived the

operation, but the stump did badly, and six months later two inches of bone were excised. The wound still did badly. Billroth determined to split the other side of the stump, separate the periosteum from the bone, and remove the remaining portion of the femur. The operation was easily accomplished; the India-rubber rope was passed round the perineum, and over the anterior superior spine of the ilium, thence over the gluteal muscles. The aorta also was compressed. Though the bleeding was much lessened, it was not prevented. Of the fourteen cases, eleven were completely cured, or approaching a cure, at the time when the author wrote. Three patients died; the case of disarticulation of the femur, and two of amputation of the thigh.

Billroth attempted to perform one of these operations without chloroform, supposing that local anæsthesia, as well as local anæmia, might be produced by the constriction, but there was no diminution of the amount of pain produced, at all events immediately; but it is suggested that further experiments in this direction should be made. In cases where amputation is performed for gangrene, or where septic abscesses exist, it may be dangerous to apply the elastic bandage, lest some of the poisonous material be forced into the circulation. Under these circumstances, it would be better to apply the circular compression only.

Dr. Arthur Menzel, of Trieste, relates, in the *Gazzetta Medica Italiana-Lombardia*, a case in which he employed Esmarch's method with success. The patient was a tall, thin man, aged sixty-five, who had, on the inner side of the left thigh, at the upper part, a tumour as large as the head of a newly born child. It had been growing five months, and had produced scarcely any pain. It was hard, with an unequal surface, and could be moved laterally, but not upwards or downwards. Dr. Menzel diagnosed the tumour to be malignant, and recommended its removal, which was agreed to by the patient.

A bandage was applied to the limb (except over the tumour), and the thigh was compressed immediately below the groin by four turns of strong India-rubber tubing. An incision ten inches long was then made, and the tumour was found to be intimately adherent to the muscles, especially the semimembranosus and semitendinosus. The femoral artery and vein, and the saphenous nerve, ran through its centre. The artery and vein were tied at each end of the tumour, which was then removed. There was then found another smaller tumour adherent to the periosteum; this was also removed. The operation (including the time taken in inducing anæsthesia) lasted three-fourths of an hour. Not a drop of blood was lost. In order to see what the bleeding would have been if the elastic tubing had not been applied, Dr. Menzel loosened it for a moment, and immediately the blood began to escape from numerous deeply seated muscular branches. When the elastic ring was removed, nine hours after the operation, no hemorrhage took place.—*London Med. Record*, Sept. 17, 1873.

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35. *Axillary Aneurism.*—Mr. T. Holmes, in his interesting lectures on the surgical treatment of aneurisms delivered at the Royal College of Surgery, and now in the course of publication in the *Lancet*, lays down the following propositions with regard to axillary aneurism:—

1. That there are a great number of these aneurisms, both traumatic and spontaneous, which are amenable to gradual, intermitting pressure, when carefully applied to the artery above the tumour.

2. That in cases where this is not possible, from the pain which the patient experiences on pressure, the application of rapid total compression, under anæsthesia, may effect a cure.

3. That the ligature of the subclavian artery is so dangerous an operation, both from its own risks and from the proximity of the sac, that it ought to be restricted to cases where pressure has failed, and to those in which, from the size and rapid growth of the axillary tumour, the surgeon thinks pressure unadvisable.

4. That the old operation is to be preferred to the ligature of the subclavian in cases of ruptured artery; and that it may be practised in cases where, from the elevation of the shoulder or from the extent of the tumour, the surgeon

would find it difficult to tie the subclavian, or fears in doing so to injure the sac; but that the anatomical relations of axillary aneurisms render this a peculiarly hazardous proceeding, and the surgeon should always be prepared to amputate if necessary.

5. That in very large axillary aneurisms, if any treatment be adopted, the arm should be amputated at the joint, after ligature of the subclavian.

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36. *Wound of Internal Jugular Vein; Ligature; Recovery.*—Mr. JOHN WOODMAN, Consulting Surgeon to the Exeter Dispensary, relates (*Brit. Med. Journ.*, Oct. 18, 1873) an interesting case of this. The subject of it was a woman, æt. about 30, who was assaulted by a man with a razor. When seen by Mr. W., ten minutes afterwards, he found "she had numerous cuts on the face and neck," etc. Of the wounds on the neck three were severe but not dangerous. "The principal one was situated two inches and a half below the left ear, and extended three inches across the throat to the cornu of the hyoid bone. I was putting sutures in the other wounds, and had nearly finished, when suddenly an alarming gush of venous blood took place from this wound, which I controlled by pressure with my finger. Feeling sure that the internal jugular vein must be wounded, I sent for assistance, and in the mean time examined the wound, and found that the external jugular vein, the auricularis magnus nerve, and the sterno-mastoid muscle, were completely divided, and that with my finger I could feel the anterior spinal muscles; the external and internal carotid arteries were also to be felt uninjured. On the arrival of Mr. Roper (Senior Surgeon to the Devon and Exeter Hospital), we had some difficulty in finding the exact spot from which the hemorrhage came, as when I moved my finger the bleeding was very alarming. I managed, however, to get my finger higher up in the wound, still compressing the vein, and then, on carefully sponging it out, I saw a distinct slit in the internal jugular vein, about half an inch in length, in the direction of the course of the vein, *and at a right angle to the external wound;* we were then able to move the descendens noni nerve out of the way, and to pass a ligature around the vein below the wound, but now the difficulty was to pass one above, as moving my finger threatened fatal hemorrhage. This was met by seizing the wound in the vein with a pair of broad torsion forceps, and holding the lips together. This nearly stopped the bleeding. We were now able to pass a ligature with an aneurism needle above the wound. On tying both these, which Mr. Roper and I did simultaneously, the venous hemorrhage was stopped.

"Some arterial bleeding from a deep source now gave us considerable alarm in her weak state, but fortunately pressure and ice stopped it also. Besides the two ligatures on the vein, only one small artery was tied, the others being treated by torsion. The external jugular vein did not give any trouble, and was not done anything to. Mrs. Henley appears never to have quite fainted, or to have entirely lost her consciousness; which is surprising, considering the quantity of blood she lost and the shock to the nervous system."

On the 19th day the lower of the two ligatures of the internal jugular came away; and on the 27th the last ligature, and the most important, came away, but required some traction. The patient recovered.

"The principal points of notice in this case are, the large quantity of blood lost; the singularity of the wound in the vein being at right angles to the external wound, showing that the razor must have been turned in the wound; and the fact of pressure stopping for the time hemorrhage from so serious a wound of the jugular vein. This I attributed to the wound being in the direction of the vein and not across it, the clot formed closing the opening and allowing the blood still to flow in the vein. The next point is the very little disturbance to the patient that the occlusion of both the external and internal jugular veins of the left side caused; the external jugular of the other side was never fuller than usual (at least to be noticed). The pain in the head was slight, and not more than would be expected from the loss of blood alone; and the circulation appeared to have at once adapted itself to the altered circumstances."

This case is also interesting, confirming the safety of ligatures to the internal

jugular vein, a point so strongly insisted on by Dr. S. W. Gross in an elaborate paper in the number of this Journal for Jan. 1867.

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37. *Organization of Thrombus after Ligature.*—Dr. T. Durante relates (*Stricker's Jahrbücher*, Pt. 2, 1872) a series of experiments instituted by him for determining the process by which, after ligature, the closure of vessels is effected. The results differed to a slight extent according as a single ligature was put on the vessel, or a double one, including a portion of vessel. When the single ligature is used there is first the coagulum at and near the point of ligature. Then the internal coat undergoes a kind of inflammatory change, abundant round and spindle-shaped cells replacing this coat. Among these cells, also, bloodvessels develop. By this means the coagulum is gradually pushed inwards and replaced, till it finally disappears. The white corpuscles and fibrin of the original clot become fatty before disappearance, and the red ones are flattened. The coagulum is thus a *transitory* thrombus, and is replaced by the *permanent* one formed by the internal coat. This process is very limited when there is simply a ligature of a vessel, but it may be made to extend a considerable distance by simultaneously painting the vessel with iodine. When a double ligature is used the process is somewhat similar, with the exception that the seat of the cellular growth is not the interior but the middle and external coats, the internal coat being destroyed. Soon the two proliferating coats become blended in one cellular layer, and the normal structure cannot be distinguished. The cellular growth in both cases ultimately develops in the usual way into connective tissue. The view which some authors take, that the organization depends on amœboid cells, is controverted by this author, and even in experiments made with vermillion he could find no confirmation of this view. Further, two modes of softening of the thrombus are distinguished, which have indeed very different significance. The one is the softening of the transitory thrombus, which precedes its absorption and depends as above on fatty degeneration, and the other is a suppuration of the permanent thrombus, which results when the cellular proliferation goes beyond proper bounds.—*Glasgow Medical Journal*, Aug. 1873.

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38. *Acupressure in the Operations of Castration and Amputation of Penis.*—Prof. Wm. Stokes remarks (*Dublin Journ. Med. Sci.*, October, 1873) that "although acupressure, as a means of arresting hemorrhage, is not held in such repute amongst many operating surgeons as it was during the later years of Sir J. Y. Simpson's life, there are, in my opinion, some surgical operations in which its advantages are superior to any of the other methods of arresting hemorrhage that the surgeon makes use of. The operations to which I think it is specially applicable are castration and amputation of the penis; in the latter operation its use being specially indicated in cases where the disease necessitating the operation extends very high up, and close to the pubes. In such cases, as well as in those in which a high division of the cord is indicated in the operation of excision of the testis, the difficulties the surgeon has to contend with in arresting hemorrhage, in consequence of retraction of the bleeding vessels, are at times extreme, and the operation then becomes a source of grave anxiety to the surgeon, and is fraught with much peril to the patient. The method, which may be termed acupressure *en masse*, was not described, either by the late Sir J. Y. Simpson, or by Professor Pirrie in his interesting memoir on Acupressure, nor is it original with me, as I saw it practised some years ago by my friends, Mr. Porter and Professor Macnamara, in the Meath Hospital, when I was officially connected with that institution. The method is a modification of the third method of acupressure, as described by Professor Pirrie, the difference being that, instead of one bleeding vessel included between the pin and the wire, there are several, together with, necessarily, the intervening tissues. The procedure is unquestionably less painful than ligature *en masse;* less tedious than, and, I believe, equally efficacious as, the deligation of each vessel separately. It is more secure than the method of charring by a red-hot iron the cut surface of the cord, and, in my experience, much more so than torsion of the vessels, and it has an advantage that none of the others possess, in addition to the rapidity and facility with which it can be applied,

and that is, that it effectually prevents the possibility of the recurrence of the unfortunate accident of retraction of the cord into the abdomen, before the hemorrhage has been effectually arrested. I have employed this method of acupressure in four, out of six, cases of castration, and in three, out of seven, cases of amputation of the penis. In these three cases, owing to the large amount of disease present, the amputations had to be performed close to the pubes. In all these cases the results were most satisfactory."

Prof. Stokes relates three cases, and alludes briefly to a fourth, which prove how effectual this method of acupressure is in arresting hemorrhage during excision of the testis.

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39. *Nævus treated by Croton Oil.*—Dr. DE SMET relates a case of nævus which he had successfully treated by means of croton oil. He observes that when the nævus is visible, vaccination is objectionable on account of the cicatrices which are left; and moreover, as in his own case, the child has frequently been already vaccinated. In this case, the girl, five years of age, had a small nævus, which was situated immediately below the lower eyelid. Numerous small superficial vessels also converged towards it, the nævus, including these vessels, being a little larger in size than a half-franc piece, and having a slightly projecting centre. After perchloride of iron had been tried without avail, the croton oil was resorted to. Fifteen sewing-needles were passed through a cork so as to allow their points to project for about two millimetres, and the points were so disposed as to represent as nearly as possible the form of the nævus and the direction of its chief vessels. The cork was then dipped in croton oil, and, having been applied exactly over the nævus, the points of the needles were quickly forced into the part. Painful at the moment, this inoculation only left after it a slight sense of heat and pricking. A little wadding constituted all the dressing. Next day there was some swelling and a little vesication, but no pain. On two occasions, at intervals of two or three days, the part was slightly painted with the croton oil. The success was complete, the nævus completely disappearing, and the vessels becoming obliterated, so that no trace of the malady remains.

The advantages of the plan of treatment consist in the entire absence of cicatrix, its easy application, the little pain caused, and the rapid effect produced, the patient in this case being cured in a week. Of course it would not be applicable when the nævus is deep-seated and its vessels are voluminous, but it is well suited for cases where the nævus and vessels are superficial, and especially when the child has been vaccinated. Probably in some cases repeated frictions with the oil might suffice, but when the vessels have attained a certain magnitude their obliteration requires the punctures.—*Med. Times and Gaz.*, Nov. 15, from *Presse Méd. Belge*, Nov. 2.

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40. *The Origin of Epithelial Cancer.*—Dr. VAJDA, of the General Hospital of Vienna, finds that in all instances there is a remarkable system of vessels, usually of very minute size, which form a kind of bed for the epithelial outgrowth, the two standing in such intimate relation with one another that the epithelial cells may almost be regarded as resulting from the proliferation of the nuclei imbedded in the walls of the vessels. This view is further supported by the fact, that in the early stages of the affection the nuclei of the vascular walls exhibit a process of endogenous multiplication, the several nuclei becoming surrounded by protoplasm, or, rather, as it may here be called, deuteroplasm. The incipient cells are at first arranged tangentially to the walls of the vessels, but subsequently become vertically placed. When the cells have accumulated in large numbers, forming irregular masses and nodules, their vitality becomes impaired by the mutual pressure, and they undergo regressive metamorphosis, sometimes in the form of mucous degeneration, as in the epithelial cancer of mucous membranes, sometimes in that of fatty degeneration, as in epithelial cancer of the lips and labia, and sometimes in that of horny degeneration, as in epithelial cancer of the limbs and eyelids. Clinical observations teach that the degenerated cancerous parts often present numerous pale cellular elements, which, when examined on the warmed stage, ex-

hibit lively changes of form, and throw out processes, but do not undergo any changes of place. Epithelial cancers develop rapidly wherever the tissues are loose, and where, consequently, there is little resistance to the extension of the vessels which form their substratum.—*Lancet*, Oct. 25, from *Centralblatt*.

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41. *The Growth of Cicatrices from Wounds made in Early Life, and the supposed wearing out of Cicatrices.*—Mr. W. Adams read a paper on this subject before the Medical Society of London (Nov. 17, 1873). In reference to the growth of cicatrices, four casts were shown taken from the feet of the same child at an interval of six years and a half, and proved that a cicatrix on each foot had grown during that time fully an inch in length. The wound was made through an operation for the cure of club-foot when the infant was ten months old, by cutting away the loose skin which could be pinched up on the convexity of the club-foot, with a view of producing contraction by the cicatrix, to overcome the inversion of the foot. No tendons were divided. Mr. Adams afterwards cured the case, when brought to him, by tenotomy; the child came under treatment again six years and a half afterwards, and it was then seen that the cicatrices had each increased fully an inch in length. The next case was that of a young lady who, when a baby a year old, was operated on for a nævus by excision in the region of the breast. The scar left at the time was less than an inch and a half, but at nineteen years of age it was found to have increased enormously, measuring three inches in length, and varying from three-quarters of an inch to an inch and a half in width. These cases proved that when a portion of skin has been destroyed, the cicatrix appears to be persistent through life, and to grow *pari passu* with the rest of the body, or rather with the portion of the body over which it may be placed. The increased size of the vaccination scars seen in the adult, as compared with the scars in children, and also the large bald patches seen on the scalp of the adult when small nævi had been removed in infancy, were also alluded to by the author. With regard to the supposed wearing out of some cicatrices, Mr. Adams believed that the only scars which do wear out are those which result from superficial cuts, which do not penetrate through the deeper layers of the skin into the subcutaneous fat. When the deeper layers of the skin are divided, as in the lancet wounds of bleeding and in tenotomy operations, a gap is formed between the divided deeper layers of the skin, which retract in consequence of the abundance of yellow elastic fibrous tissue in its structure. Lymph is then effused in the gap, and while fibrous tissue is forming, the cicatrix structure is developed. Once formed, this appears to be a permanent structure, growing as the part grows, and we have no evidence to show that it is ever absorbed or undergoes any process of wasting. There are two reasons for this permanence of cicatrix tissue: first, that the tissue is sufficiently well organized to be able to maintain itself in the general nutrition of the body; secondly, that the cicatrix tissue is so widely different from the structure of the true skin that it never can become assimilated to it, or resemble it in either the naked-eye or microscopic appearances.—*Lancet*, Nov. 29, 1873.

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42. *Excision of Thyroid Gland.*—Dr. Patrick Heron Watson states (*Edinburgh Med. Journ.*, Sept. 1873) that, in May, 1871, he was consulted by the friends of a young lady, who for many years had been affected by a tumour of the neck. It was central, prominent, of the size of a China orange, moving with the trachea, corresponding to its upper part, and of an elastic, solid consistency. It was a source of great disfigurement, and was gradually increasing in size. He recognized its thyroidal nature, and recommended its removal by excision; being tempted to advise this from its limited central position, and its prominence, which was obviously due to the separation of the sterno-hyoid and thyroid muscles in the progress of its growth.

"The operation was effected by a central linear incision, through which the surface of the tumour was readily exposed, with scarcely any bleeding. But no sooner were the lateral attachments on one side divided than blood gushed in a copious stream both from the tumour and from the vessels. The vessels were secured with some difficulty, and a ligature, embracing one half of the tumour,

arrested all further flow. To escape from further trouble from bleeding, before dividing the vascular connections upon the opposite side, I passed two preliminary ligatures beneath the superior and inferior thyroid vessels, and having tied these ligatures, completed the operation without any further loss of blood. The patient made a rapid recovery. This easy method of controlling the circulation towards the tumour impressed me with the idea of adopting this plan of mediate deligation as a preliminary to the extirpation of the gland.

"In the course of the same month (May, 1871), a patient was admitted under my care in the Royal Infirmary, affected with a multilocular cystic goitre. She had previously been under treatment, when the single cyst, of which the tumour then apparently consisted, had been tapped and injected with iodine. For a time this had seemed to arrest the development of the gland, but it again gradually enlarged, until at the time of her readmission the swelling was of the size of two fists. The patient, at the same time, was anæmic, and affected in a slight degree with exophthalmia.

"In her case, I operated by a long linear incision, which sufficed to expose the upper and lower margins of the tumour. After dividing the skin and cellular tissue, and opening the fascia over the interval between the sterno-hyoid and thyroid muscles, carefully avoiding the fascial sheath of the thyroid gland, I carried my forefinger and thumb over the margin of the tumour at its upper and right-hand corner, and feeling that I had the vascular connections of the tumour, with the right superior thyroid artery in my grasp, I introduced an aneurism needle through the fascial sheath in the middle line, bringing it out again at the right side of the level of the equator of the tumour. A ligature was passed through the eye of the needle, and when the needle was withdrawn, the ligature was left in its track. This ligature was confided to an assistant, and held aside. The needle was again passed in the situation of its former emergence, guided by the finger, and then passed beneath the right inferior margin of the gland, so as to include all the right inferior thyroidal connections. The ligature was similarly withdrawn along the track of the needle. The same process was repeated upon the left side, a ligature being carried beneath the left superior and inferior thyroidal connections, together with their delicate investing fascia. These four ligatures were then separately tied, so as to secure the vessels included within their cellular sheath as near their origins as was possible; the further separation of the tumour was effected by curved scissors. As the right superior thyroidal attachments were divided, the ligature came away in the hands of the assistant to whose care it had been confided. A gush of blood took place, but was at once stanched by means of a sponge thrust into the wound. On cleaning the parts, and drawing the edges of the incision widely asunder, the vessels were again secured by a single ligature.

"The wound was closed by sutures, except at the lower angle, where a portion of large-sized drainage-tube was inserted to secure the thorough evacuation of all blood, serum, or pus during the after-treatment. The surface was dressed with a pad of oakum, retained in position by plasters and a cravat composed of a muslin handkerchief folded upon a piece of buckram, after the manner of an old-fashioned stock. The loose and flaccid skin had in two days become adapted to the parts beneath, and showed no signs of any redundancy. The wound was healed in a fortnight, except where the ligatures hung out. One of these, after the lapse of a month, required for its removal to be forcibly drawn out until the knot appeared, and its loop divided on one side.

"The next case, one of multiple cystic goitre, was operated upon in the Chalmers Hospital in the autumn of 1871, and presented no peculiarities, except that the ligatures employed consisted of strong catgut, which were cut short after the division of the attachments of the tumour, and its removal.

"Here the healing process was completed in three weeks, and the patient, who had been sent to my charge by Dr. Howden, of Montrose, returned to her duties as an asylum attendant. In this case, the anæmia and exophthalmia which were present on admission, markedly diminished after the operation.

"The next case was that of an Irishwoman affected with a multiple cystic goitre. She was admitted to the Chalmers Hospital in the beginning of 1872.

The operation was performed exactly as in the last case, and was followed by equally favourable results.

"The last case, a patient from Leith, was admitted to the Royal Infirmary in February, 1872 This was also a case of multiple cystic goitre, which had grown steadily for twenty-three years. Its commencement dated back to the commencement of menstruation. It was of the size of a large fist. It pulsated distinctly, and was accompanied by anæmia and exophthalmos. The operation was performed upon the 1st March, 1872, in precisely the same manner as already detailed. The wound, however, was not entirely closed for six weeks after the operation. The retention of a small portion of sloughing texture within the wound was the occasion of this delay. An anomalous condition of matters manifested itself in this case after the healing was complete. A pulsating swelling about the size of a small hazel-nut developed itself in the situation where the right superior thyroidal vessels had been included within their cellular sheath in the grasp of the ligature. This gradually increased in size till it was as large as a small walnut. It then presented all the characters of an aneurism with a venous communication, manifesting the rattling of a shot-like thrill, and the *bruit de diable* in a marked manner. After continuing for about three weeks, it entirely disappeared, without any treatment being employed except rest in bed. The result attained in this case I had an opportunity of exhibiting to the Society one evening at the commencement of the present session. So far as I am aware, this method of operating is original. Mediate ligature of the thyroids has, I am aware, been proposed and employed as a means of curing—or, at least, arresting—the growth of the goitre, though its practical employment was not found to be attended by such results as to lead to imitation. The operation was further effected by four separate incisions, each made in relation to the vessel to be secured. In the operation I have now the honour of submitting to the Society, the deligation of the vessels is only a preliminary to the excision of the tumour, and is effected through the same incision as that by which the extirpation of the goitre is made.

"To attain the best results—(1.) The external incision should be very free, extending from the larynx to the notch of the sternum, if the tumour is large and spreads widely in a lateral direction. (2) The vessels, arterial and venous, in the superficial incision should be secured as they are divided, to avoid any obscuration of the parts through oozing going on. (3.) The fascia should be as freely opened as the skin. (4.) The investing delicate fascial sheath of the thyroid should be left undivided until the mediate ligature has been effected of the vessels included in their fine cellular sheath. The sheathing, fascial, or cellular capsule of the thyroid gland is only a prolongation of the sheath of these thyroidal vessels. If the capsule is opened, then, in pushing aside the soft parts to disclose the outline of the tumour, this delicate sheath is apt to glide off the surface of the thyroid gland; and should this occur, the gland may readily be detached from the vessels by comparatively gentle handling, and thus copious hemorrhage, difficult of restraint, may be occasioned. (5.) After the mediate ligature of the thyroidal vessels in their sheathing cellular envelope, the cellular capsule of the thyroid gland should now be opened, and the attachments which still retain the goitre in its position carefully divided by means of scissors, curved and blunt-pointed. There should be no tearing away of the gland—no pushing parts aside with any roughness of manipulation. (6.) Should bleeding occur, it must be recollected that it must take place within the cellular sheath of the vessel, and its prolongation upon the gland in the fashion of an investing capsule, and that, if the vessels are to be tied, they should be secured along with the cellular sheath. Without this sheath these enlarged trunks will be found so fragile as to risk being cut by the ligature; while any attempt to reach the bleeding mouths will usually be baulked by the infiltration by clot of this cellular envelope.

"I need hardly say, that a method of operation such as this, which is easy and rapid of execution, and as we have seen, devoid of risk, so far as I have yet tested its employment, holds out great attraction to the surgeon over the use of the seton or the caustic *fleches*, in the treatment of these affections of the thyroid gland."

43. *Complete Extirpation of the Thyroid Gland*.—Prof. MICHEL, of Nancy, records (*Gazette Hebdomadaire*, Oct. 31, 1873) a case of cystic goitre in a female, 24 years of age. The gland had commenced to enlarge fifteen years before. When seen by Prof. M., May 1, 1872, the tumour was of the size of a large orange, and impeded respiration, and deglutition. Iodine, internally and externally, also Fowler's solution internally, were given without benefit; on the contrary, her troubles increased, and on Nov. 23d, 1872, Prof. M. extirpated the whole tumour. The patient being chloroformed, an incision was made in the median line, then a cross incision and a flap separated on each side so as to expose the tumour. Two ligatures were applied to the anterior jugular vein and the vessel divided between them. He afterwards successively divided between two ligatures the trunks of the inferior thyroid veins and arteries. The tumour was then removed. The patient recovered in twenty-two days.

Prof. M. gives a summary of cases of this operation, but it is far from being complete.

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44. *Stricture of Œsophagus*.—Dr. RICHARDSON read before the Medical Society of London (Oct. 20, 1873) a clinical study of stricture of the œsophagus. After discussing its development and diagnosis, he proceeded to state his views of the treatment as follows. After defining that such treatment should be accepted as palliative and alleviating only in our present state of knowledge, the author insisted on systematic feeding as the first rule of treatment. This would be admitted generally, but the difference was in the supply of food. The common practice was, to attempt to dilate the stricture to enable the patient to swallow; this he thought wrong, and considered that the first effort should be made to pass through the stricture a small tube by which food could be introduced, to get the parts accustomed to the tube, and to let dilatation follow. The reasons for this plan having been offered, the details of feeding were considered, and foods were classified according as they ought to be administered—by the stomach, through the feeding-tube, or by the rectum. Dr. Richardson showed that only foods of the crystalloidal and water types could be given with advantage by the rectum. Foods of colloidal character (albumenoid foods) were useless when thus given, the albumen was simply deposited on the mucous membrane and was decomposed, and occasioned flatulency and disturbance; these foods required to be digested in the stomach before they could be taken into the circulation. Fatty foods required the lacteal system for their absorption, and they also must be administered through the stomach; by the rectum, water can be introduced, and sugar, and alcohol with water: different formulæ were here described for foods requiring to be administered by either channel. For introducing food by the mouth through the stricture, a double-current tube was advisable, as the passage of gases from the stomach was often an obstacle to the passage of food. A tube, newly constructed on this principle, was exhibited. There was also exhibited another tube, through which the patient might swallow liquid food himself after the tube had been introduced; and a bottle for the feeding process, which bottle, by a change in arrangement, could be used for injection of fluids by the rectum. Directions for keeping up the temperature of the patient, and for the employment of alcohol, were noticed at length. In some cases, where there is profuse secretion in the œsophagus and accumulation of secretion above the stricture, it is advisable to clear the tube. To effect this, the author showed a tube fitted with a sponge in a sheath; the sponge answered well for absorbing and removing the secretion. Medicines could not, the author thought, be administered in cases of œsophageal stricture for the purpose of effecting a cure, but still medicinal measures were not to be despised; they were often of great value, especially those of a narcotic class. Indeed, to secure sleep was not less important than to provide food and warmth; the stomach, however, should never be troubled with medicines; they should be introduced either by subcutaneous injection, or by enemata, or by inhalation; for procuring sleep, the author preferred the method of inhalation of a volatile fluid—bichloride of methylene and pure methylic alcohol in equal parts formed the best combination for this purpose. The question of dilatation of organic œsophageal stricture in certain cases was now brought under conside-

ration, and objection was taken to all dilators that act as wedges, and which press the strictured part downwards. Mr. Durham's dilators were commended as the best up to the present time. A new dilator, by the author, in which lateral dilatation was secured by air or water pressure, was laid before the Society as an instrument promising to do a great service. It was quite impossible, the author believed, to tear or rupture the œsophagus with this dilator. On the performance of the operation of gastrotomy, Dr. Richardson spoke with reserve; it could, he thought, never be more than a doubtful and temporary measure, so long as we fail to control the progress of the disease in the œsophagus. If we could find means to control the progress of the stricture, then we might have to consider this operation more earnestly. The author would himself prefer to open a communication into the small intestine (if an operation were demanded) through the parietes rather than into the stomach. Dr. Richardson, in conclusion, referred briefly to the experiments he had made for the purpose of being able to feed by the veins; but, as his researches on this subject were incomplete, he proposed, with the permission of the Society, to bring them forward, at a future time, as a distinct communication.—*Brit. Med. Journ.*, Nov. 1, 1873.

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45. *Successful Case of Abdominal Section for Intussusception.*—Mr. Jonathan Hutchinson, in a paper read before the Royal Med.-Chirurg. Society, Nov. 11th, first narrated the particulars of a successful case in which he had opened the abdomen for the relief of intussusception. The patient was a child of two years. The intussusception had commenced at the cæcum, and was of such length that its extremity, presenting the inverted ileo-cæcal valve, was extruded several inches at the child's anus. This condition had been one month in course of development; latterly the case had been treated as one of prolapsus, and attempts had been made to keep the bowel in place by means of a cork pad. The child was very ill, and the author having failed in attempts to effect reduction by enemata, etc., and having had experience of several similar cases which had ended fatally, determined to operate. The child was put under chloroform, and the abdomen was opened in the middle line, below the umbilicus. The intussusception was then easily found, and as easily reduced. The after-treatment consisted only in the administration of a few mild opiates, and the child made a rapid recovery. The author next narrated briefly the particulars of three somewhat similar cases in which he had been consulted, and in which the intussuscepted bowel could be easily felt by the finger in the rectum. In all three, in spite of persevering treatment by injections, bougies, etc., the patients had died unrelieved. Without attempting anything like a statistical analysis of recorded cases, the author appended to his paper, in tabular form, the notes of a very considerable number of cases bearing upon the diagnosis and treatment of similar lesions. From the consideration of these the following conclusions were suggested: 1. That it is by no means very uncommon for intussusception to begin at the ileo-cæcal valve, and to progress to such a length that the investigated part is within reach from the anal orifice, or even extruded. 2. That it is of great importance in all cases of suspected intussusception to examine carefully by the anus. 3. That in almost all cases of intussusception in children, and probably in most of those in adults, the diagnosis may be made certain by handling the invaginated part through the abdominal walls. 4. That the prognosis of cases of intussusception varies much: first in ratio with the age of the patient, and, secondly, with the tightness of the constriction. 5. That in a large proportion of the cases in which children under one year are the patients, death must be expected within from one to four or six days from the commencement. 6. That in the fatal cases death is usually caused by shock, or by collapse from irritation, and not by peritonitis. 7. That in many cases it is easy, by estimating the severity of the symptoms (vomiting, constipation, etc.), to form an opinion as to whether the intestine is strangulated or simply irreducible. 8. That in cases of strangulated intussusception, whilst there is great risk of speedy death, there is also some hope that gangrene may be produced, and spontaneous cure result. 9. That in cases in which the intussuscepted part is incarcerated and not strangu-

lated, there is very little hope of the occurrence of gangrene, and it is probable that the patient will, after some weeks or months, die, worn out by irritation and pain. 10. That the chances of successful treatment, whether by the use of bougies or by the injection of air or water, are exceedingly small, excepting in quite recent cases, and that if the surgeon does not succeed by them promptly, it is not likely that he will succeed at all. 11. That the cases best suited for operation are those which have persisted for some considerable time, and in which the intestine is only incarcerated; and that these cases are also precisely those least likely to be relieved by any other method. 12. That in the cases just referred to, after failure by injection, bougies, etc., an operation is to be strongly recommended. 13. That the records of post-mortems justify the belief that, in a considerable number of the cases referred to, the surgeon will encounter no material difficulty after opening the abdomen. 14. That the circumstances which might cause difficulty are—(1) the tightness of the impaction of the parts; (2) the existence of adhesions; and (3) the presence of gangrene. 15. That, in selecting cases suitable for operation, the surgeon should be guided by the severity of the symptoms to an estimate of the tightness of the strangulation, and as to the probability of gangrene having already set in. 16. That in cases in which the patient's symptoms are very severe, or the stage greatly advanced, it may be wiser to decline the operation, and trust to the use of opiates. 17. That the operation is best performed by an incision in the median line below the umbilicus. 18. That in cases of intussusception in young infants (under one year of age), the prognosis is very desperate, scarcely any recovering, excepting the few in whom injection treatment is immediately successful, whilst a large majority die very quickly. 19. That the fact just mentioned may be held to justify, in the case of young infants, very early resort to the operation. 20. That it is very desirable that all who, in the future, have the opportunity for post-mortem examination of intussusception cases should give special attention to the question as to whether an operation would have been practicable, and should record their results.

Mr. H. agreed in the practice of continuing insufflation as long as there was any hope of its success. In his case the bowel had been down a long time. We might diagnose the bowel being loose by its continually and gradually slipping downwards. In his case this had been going on for a month. If there was free bleeding the strangulation was probably very tight.—*Med. Times and Gazette*, Nov. 29, 1873.

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46 *Removal of the Spleen.*—In the *Raccoglitore Medico* Dr. SONSINO gives an account of a case in which, on June 20th, Dr. ATTILLIO URBINATO, of Cesino, removed a hypertrophied and mobile spleen. The incision was made in the middle line, and prolonged above the umbilicus, being at least seven inches in length. The operation was performed without much difficulty. After tying three small cutaneous arteries, opening the peritoneum, and drawing aside some loops of intestine, the spleen was seen, free from all abnormal adhesions, and of enormous size. At the inferior part was seen the gastro-splenic epiploon, which was adherent; and the vessels here were extremely dilated. At the upper part was seen the lower portion of the pancreas. The epiploon was detached, and the vessels tied. The ligatures, seven in number, were left inside without further precaution. The few adhesions of the pancreas were overcome without difficulty, simply by means of the finger. The largest vessels, and the connective tissue which surrounded them, were secured by a metallic loop and hempen ligature. The "toilette" of the abdominal cavity was made with great care. The patient lost but little blood. The ligatures of the vessels tied were passed out between the sutures, of which there were five deep and five superficial. The spleen weighed two and a half pounds. The operation lasted an hour; the patient bore the chloroform well, and subsequently appeared to be progressing favourably, but died of peritonitis three days after the operation.—*Brit. Med. Journ.*

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47. *Reduction of Large Hernia by Means of India-rubber Bands.*—Mr. JOHN DUNCAN relates (*Edin. Med. Journ.*, Nov. 1873) a case of large scrotal

hernia in an elderly gentleman, which he succeeded in reducing by means of an elastic bandage as recommended by M. Maisonneuve. The patient's mental condition (one of restless dementia) was such that no truss could be got to command persistently the large orifice. The bowel escaped from the abdomen perpetually. As the orifice was very large, and the danger of strangulation consequently slight, a scrotal bag was deemed the form of apparatus best suited to the case. The bowel was usually returned with great ease when the patient lay down. Once or twice, however, it was not so—the tumour got tense and tender, and pain in the abdomen and vomiting supervened. These attacks would pass off in forty-eight hours if the patient were kept in the recumbent posture. On one of these occasions, when the duration and severity of the illness were greater than usual, I was called to see him. I found the hernia as large as a child's head and very tense. I failed to reduce it. Its unwieldly bulk gave one a feeling of impotence in using the taxis. I procured an ordinary elastic bandage, and, using it in the following way, I at once succeeded in returning the bowel.

A turn or two of the bandage is first made pretty firmly round the neck of the sac, and then layers of the bandage are placed in succession over the surface. Care should be taken that the first layer be lightly laid on, so that, until the whole surface of the swelling is covered, the tension of the band may be very slight; but after the first layer one or two others may be applied with a firmer hand. In this way only can complete equality be attained in every part.

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48. *Ischiatic Hernia.*—Dr. F. C. Crossle communicated to the Dublin Pathological Society, March 29, 1873, the following case of this rare form of hernia. The subject of the case was a strongly-built, healthy-looking woman, æt. about forty, with a tumour on the right buttock. She stated that two years previously, while in the act of stooping and assisting to lift a heavy iron plough into a cart, she became suddenly conscious that something had given way in a situation deeply seated, and corresponding with that now occupied by the tumour; that a dull pain remained for some time in the part, rendering her slightly lame, but unattended by any fever or other complication calculated to prevent her from paying her accustomed attention to domestic duties. Regarding the occurrence as one of trifling importance, she did not at the time seek medical advice, but some three or four months subsequently, on discovering a small tumour, about the size of a pigeon's egg, situated on the lower margin of the gluteal fold on the same side, she became frightened, and consulted her usual medical attendant concerning the cause of her alarm. Mentioning to him the occurrence of the strain and the size and situation of the tumour, she suggested to him the fear that she was ruptured. No examination of the tumour was made at the time. The tumour gradually increased in size, and she consulted Dr. C., who found a tumour springing from the lower border of the right gluteal fold, its apex lying across the back of the left thigh immediately below the gluteal fold of the left side. It was at the time about the size of a well-formed fœtal head at full period, and distinctly ramifying over its surface were several veins. To the touch it was soft, yielding, and pulpy. On percussion the greater portion of the tumour yielded a dull sound, but certain points of it were slightly tympanitic; in fact the whole appearance of the tumour, entirely apart from the history connected with it, at once suggested the idea of an ischiatic hernia. He, therefore, directed the patient to cough, and an impulse was at once conveyed to the tumour, so great, that a moderate cough increased its size by nearly one-half. A similar effect was produced when she assumed the erect position. He next attempted to return the tumour within the pelvic cavity, and although he could not, after the most careful and protracted efforts, return the entire mass of intestine, he was still enabled to reduce the size of the tumour to such an extent as to permit him to feel the edge of a very considerable indurated opening, immediately overlying the great sacro-sciatic foramen; this, with the contents of the tumour, was at once forcibly protruded on removal of the hand with which he had attempted its reduction. From the most careful examination of the parts it

appeared to him that the complete return of the intestines was prevented, not so much by its size, as in consequence of adhesions which had evidently been contracted between the hernial mass and the structures amongst which it had thus become abnormally placed.

On questioning her as to her general health, he ascertained that the tumour had as yet proved nothing more than an inconvenience, save on one or two occasions when due attention to the state of the bowels had been neglected. On such occasions an unusual pain and fulness was felt in the tumour, which was at once removed by the use of ordinary purgative medicine. The menstrual function was, and still remained, perfectly normal, and no abdominal symptoms were complained of. He explained to her the nature of the affection, and assured her that in its present condition it involved no danger to life, but that from his examination of the case he feared it was impossible to attempt anything calculated to effect a complete and permanent return of the bowel to its natural position. The tumour was, however, a most decided inconvenience to her, preventing her from assuming the sitting posture, except with great discomfort to herself; and as it was growing more and more inconvenient every month, from its slow but steady increase in size, he strongly advised her to proceed to Dublin for the purpose of having a proper appliance made for the support of the hernial tumour. He wrote, accordingly, to his friend, Mr. Stokes, and in the month of September last, she was admitted into the Richmond Hospital, where those gentlemen who saw her concurred with him in the diagnosis which he had already formed in the case. While in that institution, Mr. Stokes was kind enough to obtain for him the drawing which he exhibited to the Society, and also a cast of the tumour as it then existed. He also obtained for the woman a truss, the use of which had certainly prevented the tumour from increasing so rapidly in size as it did before the application. To conclude his notice of the case, he had only to say that the patient, notwithstanding the existence of such a formidable looking malady, is still in the enjoyment of excellent health and spirits, that she is in the habit of taking long walks, and that she daily attends to her share of the work in and about a large country farm-house.—*Dub. Journ. Med. Sci.*, September, 1873.

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49. *Diphtheritic Bubo.*—Under the title of "The Treatment of Diphtheritic Bubo" Prof. BOUCHUT communicates an interesting paper to the *Bulletin de Thérapeutique* of October 15. Although one of the important complications in diphtheria, croup, and scarlatina, it is not, he observes, much known, and is not to be confounded with the simple glandular enlargement often met with in diphtheritic anginas, and which is frequently regarded as a sign of diphtheritic poisoning. This bubo is a suppurating adenitis, having nothing specific or toxical in its nature, and which appears to be the result of irritation existing in the vicinity. It is, in fact, only another example of that law of glandular pathology according to which, wherever local irritation is present, there may be set up irritation, inflammation, or suppuration of the corresponding lymphatic glands. Thus, any irritation or wound of the foot or genital organs may induce swelling of the groin; that of the fingers, adenitis of the elbow or armpit; that of the scalp, occipital adenitis; that of the lungs or bronchi, mediastinal adenitis; and that of the mouth or tonsils, ganglionary inflammation of the neck under the angle of the jaw, or in the parotid region. The progress of any of these inflammations may vary much in different individuals, suppuration occurring rapidly in some cases and more slowly in others.

In the diphtheritic and scarlatinal angina, the progress of the bubo is not very acute. At first we find one or more glands swollen but scarcely painful, they seeming lost in the doughiness of the cellular tissue, which constitutes a tumefaction in the submaxillary region extending to near the ear. There is a deep-seated, peri-glandular phlegmon which cannot be arrested, and will go on to suppuration. The tumour becomes hard and painful, without any change in the colour of the skin and without feeling very hot to the hand. The movements of the neck are difficult or impossible; and if the febrile condition of the angina had abated, it is rekindled, the temperature rising to 38° or 39° and some tenths. By degrees the tumour becomes softer, and is the seat of a deep-

placed and uncertain fluctuation, which may continue so for several days, only becoming subcutaneous very slowly. If not opened, it eventually discharges itself, but then there is a considerable collection of matter, and there is a deep detachment of the muscles of the neck, the connective tissue of which has disappeared; symptoms of putridity set in, and the child sinks.

The pus in these cases, at first disseminated, is slow in forming itself into an abscess, and when this has taken place there is already considerable detachment of the deep-seated parts. Here lies the danger of these cases, for when one has the courage to seek for the pus in good time, as soon as its formation has taken place, and before any detachments occur, these buboes heal readily enough. Of twenty-two cases of these abscesses met with in Professor Bouchut's wards, six, having been opened in good time, were cured, but all the other children died. The sole means, in fact, of preventing the fatal accidents which result from abscess of the neck caused by tonsillar diphtheritis or scarlatinal angina is opening it promptly, and, if necessary, inserting a drainage-tube.

The case which was the immediate cause of these reflections occurred in a child seven years old, who had been cured of a diphtheritis by means of injections of saponized coal-tar. There was only some albuminuria remaining, when the left submaxillary region became inflamed, and the temperature mounted up from 37.2° to 39.3°. Collodion was applied during three days without any result; and a deep-seated fluctuation was believed to be felt. As this is often a deceptive sensation in this region, M. Bouchut postponed interfering for another twenty-four hours. His doubts then continued the same; but, fearing that detachment of the deep-seated parts might occur, he ventured to pierce the supposed fluctuating point. A few drops of pus were seen on the blade of the bistoury, which had penetrated to four centimetres, and the opening was enlarged on a conductor. Two days afterwards the aperture had in part closed, pus was only imperfectly discharged, and the tumour was as large as at first—deep-seated fluctuation being perceptible. Having ascertained the size of the abscess by means of a probe, a counter-opening was made, and a drainage-tube inserted. The child did very well.—*Med. Times and Gaz.*, Nov. 29, 1873.

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50. *Application of Chloral to Ulcerating Buboes.*—Prof. Gamberini has used a solution of hydrate of chloral (10 parts in 100 of water) as an application to soft chancres and ulcerating buboes. He states that under its use—the application being made twice daily—the granulations soon assume a bright red colour; the sore acquires a healthy appearance; the pus, from being abundant and serous, becomes reduced in quantity and of good quality; and the work of cicatrization goes on satisfactorily. The observations on which he founds his remarks are twenty in number; they appear to indicate the value of chloral hydrate in the treatment of slightly atonic sores with abundant suppuration, but there is nothing to show that the intensity of the syphilitic poison is diminished by its use.—*Brit. Med. Journ.*, Oct. 11. 1873, from *L'Imparziale*, Aug. 1, 1873, and *Giornale Italiano delle Malattie Venerie.*

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51. *Mode of Formation of Urinary Calculi.*—Dr. Geo. Harley read a communication before the British Association for the Advancement of Science, which, though of a strictly scientific character, has at the same time an important practical bearing upon treatment. The following general laws were laid down by Dr. Harley as being applicable to all kinds of renal calculi: 1. In all cases of constitutional calculi the amount of solids excreted by the kidneys must be disproportionate to the amount of liquid. The liquid may be diminished, while the solids remain normal; or the solids may be in excess, while the quantity of liquid remains normal. 2. Calculi may occur at any period of life—from the cradle to the grave. 3. Constitutional calculi are frequently hereditary. 4. The deposition of a calculus in any part of the urinary system is always dependent on some special local cause. The cause may be trifling and temporary, but still it must exist. Once, however, the concretion has begun to form, the original exciting cause is soon lost sight of. 5. The vast majority of

constitutional calculi, be their nature what it may—oxalate of lime, phosphate of lime, uric acid xanthin, or cystin—have their origin in the kidneys, and are transported elsewhere by the urine. 6. Renal calculi may be divided into two great classes—the organic and inorganic. The substances composing the former are manufactured within the frame itself; the latter are the direct products of the food and drinking-water. 7. The colour of a calculus does not necessarily depend on its nature, but on the amount of urohæmatin in the urine. Phosphatic and cystinic calculi form an exception to this rule, by refusing to combine with extraneous pigments. 8. There are three perfectly distinct modes in which crystalloid material is deposited in the formation of calculi. The first and rarest form of calculus is that which consists of a monster crystal, or an aggregation of monster crystals, which are only to be met with in the case of triple phosphates, oxalate of lime, and uric acid. The second is that in which a certain amount of colloid is united with the crystalloid material, one in which it may be said that small crystals separating from the super-saturated renal secretion become entangled in mucus, tube-casts, epithelium scales, or other colloid material, and by fresh aggregations around them gradually become closer and closer packed together until they assume the appearance and properties of a compact concretion. The last mode of formation is by the aggregation of molecular atoms, on the principle of molecular coalescence from the union of viscid or colloid material with earthy or organic crystalloid matter, in the manner of the formation of the dental tissues and shell structures described by Mr. George Rainey. To these three different modes of constitutional calculus formation the author gives the respective names of crystalline, crystallo-colloid, and molecular coalescence. In concluding, Dr. George Harley remarked that the calculi he had been describing must not be confounded with those which for the sake of distinction might be termed "accidentally acquired," such as vesical, which frequently have for their nucleus foreign substances, such as a pea, a barley-corn, a piece of bone, hair, wire, a fragment of sealing-wax, or a portion of catheter—the irritation of which excites the presence of tenacious mucus, blood, or even pus, with which the foreign body itself becomes coated, and in and around which crystalloid molecules and actual crystals are deposited and form the calculus. Finally, calculi are not always of uniform composition throughout; their composition varies at different times with the different states of health of the patient. The centre of the concretion may be composed of uric acid, then may come a layer of oxalate of lime, and over that another layer of uric acid or of phosphates; so that, in a section of a calculus, the clinical phases through which a patient has passed may be read as truthfully as the geologist can read the earth's history in the strata forming its crust.—*Med. Times and Gazette*, Oct. 4, 1873.

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52. *Median Lithotomy.*—Mr. WM. CADGE, Surgeon to the Norfolk and Norwich Hospital, relates (*Brit. Med. Journ.*, Oct. 11, 1873) the results of his own personal observation and experience of median lithotomy. He has performed that operation 54 times himself, and it had been done 36 times by his colleagues. He says that his present experience teaches him that the operation "is advantageous and suitable only for those patients in whom the stone is of small size—about that of a date or a filbert—and where, for some sufficient reason, lithotrity is not available. Within these narrow limits, median lithotomy is admirable; the incisions are small, and there is but little fear of bleeding or injury to the rectum; the recovery is rapid; the bladder retains the urine, and voids it voluntarily almost from the first; the patient is saved from much of the discomfort of lying in wet sheets with an urinous smell; and the wound heals almost by the first intention. I repeat that, within this limit, the operation is excellent; and every patient who is cured by it may rest assured that he is cured with as little pain, discomfort, and injury, as surgical science is capable of. Beyond this limit, the path becomes thorny and dangerous; and, in the long run, he who treads it will, I firmly believe, repent and fail to obtain the success which is so dear to all lithotomists. I have traversed that path, but prudence bade me retrace my steps."

53. *Hereditary Exostoses.*—An interesting specimen of this somewhat rare form of disease has presented itself lately among Dr. Poore's out-patients at Charing-Cross Hospital, London. Cases of hereditary multiple exostoses are mentioned by Paget in his work on Surgical Pathology, and also by Virchow in his Pathology of Tumours; but none of the instances mentioned by those authors seem to us more remarkable than the following.

H. H., aged twenty-seven, a clerk, who sought advice in consequence of trifling dyspepsia, presented the following appearances: He was 5 ft. 2½ in. high, and was studded with bony tumours varying in size from a small marble to an orange. There did not appear to be any in connection with the bones of the skull or face, but they were present—(1) On the sternal ends of both clavicles. (2) On the inferior aspect of the spines of both scapulæ. (3) On the upper extremities of both humeri. (4) At the carpal extremities of the radius and ulna on both sides. In this situation the tumours were very large, and the bones of the forearm were remarkably short. (5) Small nodular masses were to be felt in connection with one or either extremity of most of the metacarpal bones and phalanges, but their arrangement in this situation seemed to be capricious and indefinite. (6) On the femora, on the outside of the shaft, just below the trochanters. (7) On the upper end of both tibiæ. These were the largest to be found anywhere. (8) On the upper end of both fibulæ. (9) At the lower extremities of both tibiæ and fibulæ. The bones of the leg were the only instances in which exostoses were to be distinctly traced in connection with *both* ends of the shaft of a long bone. The metatarsal bone and phalanges were scarcely at all affected; and the nodular swellings, where present, were only detected as slight irregularities. No distinct tumours were felt in connection with the ribs, but the formation of the thorax was markedly rickety.

C. E. H., the patient's little daughter, aged four and a half years, was a complete miniature of her father, and presented exostoses in most of the situations where they were observable in him. They were proportionately much smaller, and had apparently only just commenced growing in some places, and could only be detected as very small nodular masses. They had not in any position grown so big as to cause any obvious deformity. The child was bright, intelligent, and healthy, and did not present the least sign of rickets. Her first exostosis was noticed when she was nine months old, and grew in connection with one of the phalanges of the little finger. The father states that none of them were congenital.

The patient states that his maternal grandfather had the same condition, and was two or three inches shorter than the patient himself. He does not know, for certain, that his mother had any tumours about her. One of his sisters, aged thirty, has a tumour on the lower end of one femur. She is married, and has three children, but none of them have as yet manifested any tendency towards the formation of exostoses. He has himself another child, a boy aged twelve months, in whom as yet there is no appearance of malformation.—*Lancet*, Nov. 29, 1873.

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54. *Resection of the Knee-joint in War.*—Dr. Ernest K"ster, in a paper on this subject, gives six cases, of which three died. Amputation was performed in two; one of these recovered. Of the remaining two, it is stated that healing occurred, but in an unsatisfactory manner. Lotzbeck has collected 66 cases of excision for gunshot injury performed both in peace and in war time, with 48 deaths, or 72.8 per cent., a greater mortality than from amputation in the lower third of the thigh, which gives 60 per cent., while in amputation of the thigh, without regard to position, the mortality is 74.3 per cent. Nüssbaum states that he performed excision of the knee 26 times, and that 7 recovered completely, while 3 after nearly complete recovery died from diarrhœa. [Most of these cases were, the reporter believes, performed after the battle of Sedan in an ambulance, subsequently transferred to the care of the Anglo-American ambulance, and he certainly did not see amongst those patients a single case of recovery.—*Rep.*] Dr. Küster has collected in all 101 cases with

66 deaths, or 65 per cent., and considers this to exceed that of amputation at the lower third of the thigh by a very trifling amount.

On the whole, the author is disposed to give resection of the knee a further trial in time of war, and concludes by quoting Nüssbaum's remark that the worst result after resection is better than the best amputation stump; an assertion with which the reporter is by no means disposed to agree.—*Lond. Med. Rec.*, Aug. 27, and *Berliner Klinische Wochenschrift*, April, 1873.

55. *Resection of the Coccyx as a means of facilitating the discovery of the inferior extremity of the Rectum in cases of Imperforate Anus.*—M. VERNEUIL, in a communication to the Surgical Society of Paris (May 28th, 1873), observed that long since he had remarked that resection of the coccyx facilitated the discovery of the inferior extremity of the rectum in cases of inperforate anus, and in 1857 and afterwards in 1862 he had proposed that operation, which he first put in practice in 1866. He has since treated five cases of ano-rectal imperforation by this method. Five of his patients were of the male sex and one female. Four were born at full term, one at 8½ months, and one at 8 months and a week. They were all very weakly, but none of them furnished any instance of malformation, except the one mentioned. The anus was properly formed in four patients, but ended in a *cul-de-sac* of an average depth of twelve millimètres. The intergluteal fold was as clearly defined as it is in a normal state. In the two other cases the perineum protruded, and was convex and keel-shaped. On another occasion the anus was represented by a small tubercle.

He has not met thus far with any of those simple cases where the occlusion is formed by a thin membranous partition. Nothing at the outset has ever indicated the precise situation and the exact depth of the rectal termination. He was, therefore, obliged in the case of each patient to seek the intestine without further aid than the knowledge of normal anatomy afforded. He even fruitlessly searched for that fibrous cord which is supposed to replace the closed portion of the intestine, and which extends from this portion either to the vulva, or to the membranous portion of the urethra, or to the bladder, or to the *cul-de-sac* formed by the normal anus. This cord is sometimes seen in necropsies, since it has been described; but during operation, whilst the wound is bleeding, it is seldom distinguishable. Once he thought he had met with it, but he did not succeed in tracing it. In saying that on examination there was not anything to reveal the situation of the rectum, he adds that he voluntarily deprived himself of a means of information, furnished by making the preliminary exploring puncture, a mode which he emphatically condemns as dangerous and not leading to any result, even negative. Although deprived of all preliminary indication, he nevertheless succeeded not only in discovering the termination of the intestine, but also in fixing it to the skin by suture, that is to say, in performing *in toto* the operation of Amussat. He has never had to abandon the perineal region in order to have recourse to the operation of Littré. If his researches have been sometimes long and troublesome, they have always succeeded, and he can truly say, without much injury to the region operated on. The proceeding of Amussat, when care is taken not to swerve from the median line and not to penetrate too deeply towards the peritoneal cavity, has this incontestible superiority, that it does not hurt any important organ. The success of these operations he attributes without hesitation to the modification which he has introduced, that is to say, the resection of the coccyx. Although this is not absolutely necessary, it singularly facilitates and shortens the operation.

In all his cases, extending the field of operation has rendered manipulation so much easier, that he has always been able to find the intestine a few minutes after the excision of the coccyx, although previously he may have been searching for it during a quarter of an hour, a lapse of time which will not seem enormous to any one who has had occasion to perform the operation. The resection of the coccyx, besides being the means of discovering and isolating the end of the intestine, greatly facilitates the joining of the coats of the rectum to the cutaneous wound; this is a feature which deserves serious attention. Indeed, to secure the harmlessness of this final result of perineal enterotomy, to prevent stercoraceous infiltration, the inflammation caused by the incessant

contact of foreign substances with the wound, and finally, the dangerous contraction which follows, it is necessary to make a natural muco-cutaneous orifice, which easily conducts to the exterior, which suppresses the granulating passage, allows the introduction of the finger and the application of detersive injections, and, lastly, has the chance of remaining permanently open.

The junction of the rectum and the integuments can alone realize these conditions; but to do this is often difficult, if not impossible, in consequence of the elevated situation of the rectal *cul-de-sac*, and its being firmly fixed to the neighbouring parts. If too much force be used to draw it down, there is a danger of tearing the fragile wall, either by the forceps or with the sutures. On too strong a pressure the sutures, although well placed, will cut the parts they embrace before there is a sufficient adhesion. The intestine will reascend, and a large cicatricial ring will form between the skin and the rectal wall. The resection of the coccyx obviates these evils; and in this way there is no necessity to draw down the rectal *cul-de-sac*, because it allows us to open it behind, and to attach it without difficulty to the upper portions of the edges of the skin wound. Indeed, the artificial anus in this position is situated higher and more behind than it is normally. Nevertheless, in three cases where M. Verneuil was able to study the patients a sufficient length of time, this slight ectopia did not cause any serious inconveniences.

Turning to another part of the question, the pretended dangers of this modification, M. Verneuil observes that it is universally allowed that the suppression of the end of the coccyx cannot produce future evil results. It remains, then, to know if this suppression offers any danger during the manipulation of the operation. He has done his utmost to discover any, but in vain. Firstly, the point of the bone only is taken away—that is to say, a cartilaginous extension, averaging one centimètre in length and the size of a goose-quill. It is isolated posteriorly by the mere act of prolonging the median incision; on the sides with a stroke of the scissors, which shaves the lateral borders; above, it is separated from the body of the bone either by the point of the bistoury or by scissors; and in front, towards the pelvis, the operator penetrates into a region occupied by a cellular fibrous tissue, easily torn by a blunt instrument, and not containing any important organ or notable vessel. The damage occasioned by the excision is unimportant, compared to those which result from a blind search made by means of the fingers, forceps, or blunt instrument. It may then be said of this operation that all the dangers are imaginary. For confirmation on this point, he appeals to any who will repeat the operation on the dead body.—*Gazette Hebdomadaire*, June 20, 1873.

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56. *The Pathology of Conical Stumps.*—Dr. P. Guterbock describes in the *Archiv für Klinische Chirurgie*, vol. xv., the form of conical stump due to hypertrophy of bone, and occurring even in cases where the amputation has been skilfully performed. This proliferation of bone, a process not very different from what takes place in the normal healing of wounds, sets in in the first months after operation. Acute forms are met with as the result of osteomyelitis, or rather of acute ostitis or periostitis, following the removal of the periosteum; or as broad spongy hyperostoses, having a rather firm attachment to the bones. They may appear within three weeks. Chronic hyperostosis may be the immediate result of an excessive formation of new bone in the normal course of healing, or it may appear during or after diseased states of the wound. The secondary formation of a medullary canal, which takes place in many cases, is the result of a melting down of the newly formed bone, and may end in union of the medullary cavities. The cortical portion also often becomes porous. Periosteal bone-proliferation only sometimes produces conical stumps; but there is often a thickening of the sawn end of the bone through an excessive formation of callus. There is a remarkable absence of regularly arranged Haversian canals in the bone formed from without. Conical stumps may arise from excessive ossification of the interosseous ligament, which not unfrequently takes place, generally as the result of chronic irritation from artificial limbs.—*Brit. Med. Journ.*, Sept. 20, from *Centralblatt für die Medicin. Wissenschaft*, August 23, 1873.

57. *Treatment of Frost-Bite.*—Prof. E. BERGMANN observes that in a country where 690 individuals yearly become the subjects of frost-bite, and in a city where 7 per cent. of the post-mortem examinations refer to the same cause of death, the very abundance of the materials at his command compels the physician to endeavour to combat so old an enemy through the means afforded by the science of modern times. Dr. Bergmann urges that the all-important point in the therapeutics of frost-bite lies in the first step of treatment—the measures first put in force are decisive for the subsequent course of a case. Whether only a portion or the whole of the body have been exposed to cold, it is a matter of the last importance that warmth shall be very gradually restored. The risk of gangrene and of the life of the patient will depend upon the greater or less caution that is adopted during transition from the cold to a higher temperature. From the evil effects of a sudden transition, the older surgical writers came to speak of the effects of extreme cold as comparable with those of extreme heat. The inhabitants of northern countries and high mountains have long been familiar with the dangers of a sudden change, and surprising, indeed marvellous, results are recorded at their hands in the restoration of the frozen. Without casting doubt upon some of these reports, yet many accounts published have proved too much. Of this an example may be found in the stories circulated respecting the capability of frozen frogs to support life after thawing of the body. The experiments of Horvath have proved this assumption to be erroneous. The striped muscle of the frog is killed by the reduction of their temperature to the freezing-point, so that, after being thawed, they are equally insensible to electrical or to mechanical stimulation.

It is obvious that the life of an animal whose muscles have lost their vitality cannot longer be maintained; further, what holds good in this respect, with regard to cold-blooded animals, must hold still more strongly in the case of warm-blooded animals. In one instance of a man who lay six days under the snow, the observer, Krajewsky, states that the heart's movements had not quite ceased, and the snow in contact with the body was partly melted. Horvath instituted experiments in order to ascertain the lowest degree of temperature to which the bodies of young dogs may be cooled without causing their death. The lowest temperatures observed were + 5.8° Cent. and + 4.8° Cent. (= 42.6° and 40.6° Fahr.).

It is yet an open question how far a portion of the body may be cooled down without losing its vitality, although the changes that the structures of a limb undergo before it mortifies are well known. John Hunter studied these changes by freezing a cock's comb. Intense cold does not destroy animal tissues in the same way that heat destroys them, although the contact of frozen mercury with the skin causes instantly the appearance of a burn. A frozen limb gradually becomes as pale as if every drop of blood had been withdrawn from it. The reaction of warmth gives rise to wrinkling and separation of the epidermis in blisters, and the formation of the line of demarcation at the edge of the gangrenous portion. One of the most constant antecedents of this last state is the dark blue discoloration of the skin, from relaxation of the blood-vessels under the influence of warmth.

Dr. Bergmann has introduced in the treatment of these cases the principle of position, as adopted by Volckmann in inflammation of limbs, or parts of limbs, viz., vertical suspension, which has been found to be a most efficient means of combating the congestion and infiltration of phlegmonous limbs. A greatly swollen and tense condition, from purulent infiltration of fingers, hand, and arm, Dr. Bergmann states that he has seen to become in a few hours soft and wrinkled.

In the case of a youth, aged nineteen years, who in crossing a lake had fallen into an icehole, Dr. Bergmann put into practice the principle of treatment by elevation of the limbs. How long he had remained with his lower extremities in the water and his body in ice, the patient did not know. When found and rescued, he was unconscious. He was taken to the hospital, placed in a cold water bath, and his limbs were gently rubbed. The pulse had fallen to fifty, his skin was pale and cold. In the bath his pulse rose in number, the breathing became deeper, and the power of moving his limbs returned. The temper-

ature of the water was very gradually raised, and after a while the patient was placed in bed. The pulse became steady at 120. On the following morning he was much exhausted; his pulse was 120 and small. The temperature of the body was 38.2° Cent. (= 71.8° Fahr.). Consciousness returned, but it was not until the third day that he was able to give a connected account of his accident. The toes and fingers were of a dark blue colour, and blistered, as were also parts of the hands and feet. Having regard to the extreme venous congestion of the limbs, it was determined to practise suspension. The legs were inclosed in light wire framework, by which the heels were raised from two to three feet above the bed. The arms were also raised, and covered with cold compresses. The swelling subsided in twenty-four hours. The skin recovered its natural characters in seven days. The blisters, when pricked, had some of them dried up into dark crusts, while some underwent ulceration and granulation. The ultimate phalanges of two of the toes mortified, and were separated at the end of three weeks. The author regards the plan of treatment as having been eminently successful, and on these grounds recommends its adoption.—*London Med. Record*, Oct. 29, 1873 from *Dorpater Medicinische Zeitschrift*, vol. iv, pt. 2.

OPHTHALMOLOGY.

58. *Insufflation of Flowers of Sulphur in Diphtheritic Conjunctivitis.*—Dr. Bergmeister has communicated to the Vienna correspondent of the *Irish Hospital Gazette* (April 15, 1873), some nice results that he has obtained in diphtheritic conjunctivitis by insufflation of flowers of sulphur (the flores sulphuris loti of the Austrian pharmacopœia). In Austria cases of diphtheria are not so common nor so dangerous, either as regards the primary affection or the results on the cornea and conjunctiva, as in Germany. Sometimes, in the case of badly nourished and neglected children, it commences with the formation of crusts on the ocular conjunctiva (plica semilunaris), the palpebral conjunctiva, on the neighbouring skin, and on the mucous membrane of the nose and mouth, accompanied with fever; but these cases are the exception. It is usually preceded by some form of conjunctivitis (conjunctivitis lymphatica, blennorrhœa chronica), which has been neglected; and it would seem that its outbreak is favoured by constantly breathing the atmosphere of damp and foul rooms. When catarrhal conjunctivitis is epidemic here—as, without any doubt, it is now and then—croupous and diphtheritic forms are pretty often met with, usually consisting of well-defined infiltrations of the conjunctiva, some of which become absorbed during the course of the disease; some, becoming rapidly disintegrated, leave behind them ulcers which lead to more or less destruction. A painful swelling of the submaxillary gland of one or both sides forms a diagnostic mark between these affections and ordinary affections of the conjunctiva. Until lately this disease was treated expectatively in Arlt's clinique, for, with the exception of scrupulous cleanliness (constant removal of the secretion collected in the conjunctival sac, by injections of lukewarm water), nothing was used except an ointment to the forehead (unguent cinerei[1] ʒj, ext. opii aquos. gr. viij. *Signa:* to be rubbed on the forehead and temples every second hour); and, as a prophylactic for the protection of the cornea, a solution of atropia (atrop sulph. gr. ss, aquæ dest. ʒj), was dropped into the eye. The results, since Dr. Bergmeister has used insufflation of flores sulphuris, have been much more favourable than before, he being incited to further trials by the great success in the first case treated after the new method.

Case I. A girl, 10 years of age, who had been suffering from her eyes for fourteen days, was admitted into Arlt's clinique with well-marked diphtheria of the conjunctiva, and also of the mucous membrane of the nose and mouth. As there were already deep ulcers on the cornea, the treatment was confined

[1] Mercurial ointment.

to the ordinary precautions. As, however, the diphtheritic action still continued in spite of them. Dr. Bergmeister determined to try insufflation of flores sulphuris into the sac of the conjunctiva, and into the anterior and posterior nares, having previously cleared out the latter by injections of lukewarm water and a solution of chlorate of potash. The crusts on the lips were touched with a stick of caustic potash. The good effects of this treatment were very soon visible in the cleaning off of the crusts from the conjunctiva. The ulceration, it is true, penetrated one cornea, but this was quite unavoidable, and its further action was, at all events, checked; while the ulcerations on the other cornea became cleaner, and it was soon in process of scabbing. It was made evident at the same time, that the insufflation of the sulphur had no tendency to irritate the ulcer of the cornea, as often happens when calomel is used. It is also worthy of notice that the improvement in the conjunctiva and in the mucous membrane of the nose, that is to say, in the parts treated with flores sulphuris, was more immediate than on the lips where the crusts were touched with caustic potash, and the same was observed in all subsequent cases subjected to similar treatment.

CASE II. A schoolboy, who had been troubled for a considerable time with conjunctival blennorrhœa, got a further subacute attack with œdema of the lids, chemosis of the ocular conjunctiva, and enormous swelling of that portion which joins the latter with the conjunctiva palpebrarum, with the formation of button-shaped elevations, whose tips were covered with diphtheritic crusts. The submaxillary gland was swelled, and there was moderate fever. At first the treatment consisted in the instillation of atropia into the eye, the application of the before-mentioned ointment to the forehead, and the most scrupulous cleanliness. In three days the whole conjunctiva was in a state of gray infiltration, the cornea was dull, and below and internally there was a small, marginal ulcer. The insufflation of flores sulphuris, once a day, was now tried; in three days the parts that had been covered with the diphtheritic exudation were quite clean, and the infiltration of the conjunctiva had disappeared. Recourse was now again had to the lapis,[1] and in ten days the ulcer of the cornea was healed, and all trace of diphtheria had disappeared.

CASE III. Another patient was a man, aged 24, who had had conjunctivitis diphtheritica for four days. There was a good deal of fever, with œdema of the lids, gray infiltration of the conjunctiva, and a deep ulcer in the conjunctiva of the lower lid; the cornea was intact, the submaxillary glands swelled. The treatment at first consisted in cold compresses, atropia, and the ointment to the forehead. This was continued for two days, when it was found that the infiltration had increased, and insufflation of flores sulphuris was then tried. On the following day the ulcer of the conjunctiva was quite clean, and in five days the cure was complete.

CASE IV. A fourth case was that of a girl 7 years old, who had been suffering for a month from conjunctivitis lymphatica. Four days before admission she got fever, and the submaxillary glands and the glands of her neck swelled. The lips, mucous membrane of the nose, and the whole conjunctiva were covered with numerous yellow crusts, with the secretion of stinking matter from the nose. There was a marginal, sickle-shaped ulcer on the cornea. In eight days the parts treated by insufflation were quite recovered, whereas the crusts on the lips, which were touched with caustic potash, required eight days more.

CASE V. Another case, in which there was conjunctivitis crouposa, with œdema of the lids, the formation of a superficial croupous membrane on the conjunctiva palpebrarum, and extensive gray infiltration underneath it, with chemosis, the cornea being intact, was cured after eight days' treatment by insufflation.

The use of flores sulphuris in cases of diphtheria is not exactly new. As early as the year 1868 it was recommended by the French and Spanish physicians in cases of diphtheria of the throat, and favourable reports of it appeared

[1] Caustic potash.

in No. 20 of the *Gazette Médicale*, Paris, 1868, as also in the *Union Médicale*, 1869.

Seitz, of Munich, has also made successful experiments with it, and has published the favourable results he has obtained by sulphur in parasitic diseases.

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59. *Operation for the Extraction of Cataract complicated with Adhesion between the Capsule of the Lens and the Iris*.—This form of cataract presents great difficulties to the ordinary methods of extraction. The method which M. L. De Wecker adopts is the following:—

"*First period*.—Having introduced the speculum, and studied the globe by means of the fixation forceps carefully applied close to the inferior border of the cornea, I make an incision with a small flap having a height of 2 mm., similar to that which I recommend for the extraction of simple senile cataracts. I enter a Graefe's knife at a distance of one millimetre from the superior and external border of the cornea, and pass it directly through the cornea and behind the iris. The knife is then glided on parallel to the posterior surface of the iris, and passed out again after the counter-puncture, at the same distance of one millimetre beyond the superior internal border of the cornea. By paying very particular attention to the position of the knife, so as to keep it perfectly parallel with the iris, the execution is not difficult, for the breadth of a well-made knife then gives the exact height required for the flap, namely, 2 mm. The section being completed, we at once obtain a corneal wound, measuring internally 9½ mm., together with a corresponding wound of the same extent in the iris. As a rule, by making the section with precision, the lens is not touched, and in every case where it is performed in accordance with the rules laid down all escape of vitreous is avoided.

"*The second period* of the operation is devoted to the laceration of the capsule. After carefully wiping the eye with a sponge, and turning the conjunctival flap down on the cornea, I make gentle pressure on the globe with the fixation forceps, for the purpose of causing the wounds in the cornea and iris to gape. During this manœuvre the border of the lens presents itself in the wound, and the capsule may be easily lacerated the whole extent of the section, and close to the equator of the lens.

"*The third period* of the operation consists in the removal of the lens, which is affected by means of a gentle pressure, combined with an upward stroking movement made (above the fixation forceps) with the cacutchouc curette, just as in cases of ordinary extraction. As a rule, the expulsion of the viscid lens is accomplished without much difficulty through this large opening in the cornea and iris.

"*The fourth period* is devoted to the excision of the portion of the iris corresponding to the wound of the cornea, together with the removal of the masses of exudation and the parts of the capsule which are adherent. To effect this, I employ the scissor-forceps M. Lüer has manufactured according to my directions, one branch of which I pass behind the cornea in front of the iris, whilst the other branch is passed behind the thickened membrane. By making two sections which converge towards the inferior border of the pupil, a triangular flap is formed, which is easily removed with the forceps, and thus we at once obtain a perfectly clear pupil.

"Should no escape of vitreous occur during the formation of the pupil, I proceed to clear away any cortical masses which may remain behind the iris, in the same manner as in the ordinary operation for extraction of cataract. If, however, it becomes impossible to remove these cortical masses, their presence need not cause any uneasiness after making such a large pupil, for their absorption will take place without producing any alarming symptoms of irritation.

"Thus, by a single operation, we obtain a result which the method recommended by Von Graefe scarcely permitted us to attain after a second tentative operation. Moreover, by adopting the method I advocate, it is always possible to modify it in accordance with the novel conditions which may present themselves during the operation. In fact, if, after making the section of the cornea

and iris, I find that the pathological changes which have taken place in the iris are less important than the appearance of the eye before the operation led me to expect, I make a change as regards the method of lacerating the capsule.

"Suppose, for example, after the first period of the operation, the iris retracts towards the obstructed pupil, and the simple section of the iris with the knife has produced a narrow, jagged pupil, through which the cataractous lens appears; in such a case, simply drawing the eye downwards with the fixation forceps, without making any pressure on the globe, I introduce the cystitome on the flat into the pupil I am about to make, and easily detach the iris from the capsule with the back of the instrument. That done, I endeavor to form a triangular flap in the capsule, executing the same movements behind the iris as in the ordinary operation for extraction, with a free pupil, enlarged by the excision of a portion of this iris. In such a case, owing to the complete freedom of the iris, the manipulation of the scissor-forceps becomes much easier once the cataract is removed. The employment of the scissor-forceps is here again very much to be preferred to that of the simple forceps, with which the iris must be drawn out, in order to be excised, for all injurious traction, with rupture of the hyaloid, may be avoided by using the scissor-forceps with dexterity.

"My method of operating differs from those hitherto adopted, in the following particulars:—

"I do not rest satisfied, as Wenzel did, with an insufficient enlargement of the pupil, a method which, in the majority of cases, eventuates in a new occlusion of the pupil so formed.

"Contrary to the mode of operating adopted by Von Graefe, I do not postpone the formation of the pupil to a second operation, at which recourse is had to instruments calculated to exert violent traction, together with strong hooks, which at the same time tear the iris and vitreous. The excision of a portion of the iris (remaining in position behind the cornea) by means of the scissor-forceps is, of all the methods hitherto employed, the only one which allows us by the one operation to remove the iris, the masses of exudation, and the thickened capsule, and that without any injurious traction being made upon the ciliary body, or the occurrence of prolapse of the vitreous, a circumstance Von Graefe looked upon as indispensable to the success of the operation.

"We venture to hope that, owing to the facility with which the new scissor-forceps can be manipulated, a practice will come into general vogue which is calculated to render unquestionable service in more than one case, where the boldness of surgery has not hitherto dared to venture."—*Irish Hospital Gaz.*, Nov. 1, 1873, from *Ann. d'Oculisque*, livreson 5th and 6th, 1873.

60. *Exophthalmic Goitre.*—Mr. SWANZY relates (*Irish Hospital Gazette*, Sept. 1, 1873) a case of this, and calls special attention to a pathognomonic sign of the disease, namely, the imperfect continuous consensual movement of the upper lid when the gaze is directed downwards. This is no direct consequence of the exophthalmos, for in cases of tumour of the orbit and other diseases which cause protrusion of the eyeball, the symptom is uncommon, although, indeed, in these cases when the prominence is very great, the motion of the lid is of course interfered with. But in Graves's disease this symptom exists (at least in the commencement of the disease), even with a very slight degree of exophthalmos, when the eyeball is scarcely more prominent than in some short-sighted people. In the course of the disease this symptom may disappear without any diminution in the exophthalmos. It seems probable that it depends upon some disturbance of innervation in the orbicularis. The rarity of involuntary nictitation in our case, and which is not uncommon in the disease, is probably to be referred to the same cause. This imperfect immobility of the upper eyelids is of importance as a diagnostic sign in cases where the tumefaction of the thyroid is but very slight (as in our case), and the excessive heart's action little marked. And also in cases of the disease when one eyeball is more prominent than the other, as sometimes happens; such cases being very apt to mislead.

According to Virchow[1] the heart after death has usually been found enlarged and dilated, especially the left ventricle, even when the valves were healthy. Occasionally the aorta and larger vessels have been found atheromatous. Clinically, hypertrophy of the heart belongs almost exclusively to an advanced stage of the disease. The exophthalmos depends upon changes in the adipose and cellular tissue of the orbit, which sometimes is found hypertrophied, but for the most part merely swollen from hyperæmia. With regard to the pathology of the thyroid gland in the disease, there do not seem to be any constant appearances found. It may be almost normal, or simply hypertrophied, or hypertrophied with large varicose vessels, or contain hytadid cysts.

The starting point of the disease is still unknown to us. That it is not situated in any of the three organs which are so prominently affected, is evident from the fact that the part which any one of these plays may be almost or completely wanting. That it is a disease of the blood is a theory which—while it affords an easy and favourite mode of escape from such difficulties—is not here capable of satisfactory proof. Experience, at least, does not teach us that the sufferers from exophthalmic goitre labour usually (although they doubtless sometimes do) under anæmia or chlorosis; nor are they commonly the subjects of inherited or acquired syphilis; nor, so far as we are aware, of a strumous habit, or of tuberculosis. There seems to be a good deal of evidence in favour of the origin of the disease being situated in the nervous apparatus, especially in the sympathetic system. Thus, Drs. Cruise and Robert McDonnel, in a case examined by them,[2] found the inferior cervical sympathetic ganglia almost obliterated and supplanted by cellular and adipose tissue. Some foreign investigators, too, including Recklinghausen,[3] have observed a somewhat similar condition, while one or two have seen the cervical ganglia enlarged, and resembling lymphatic glands "in the first stage of tuberculosis."

MIDWIFERY AND GYNÆCOLOGY.

61. *Fortnightly Hemorrhage during Pregnancy.*—Dr. S. Haynes read the following case of this before the Worcester Med. Soc. H. H., æt. 36, states that in all her pregnancies there has been a hemorrhagic uterine discharge, more profuse than her menses (which are of usual quantity and quality), but of exactly the same nature, every fortnight up to the sixth month, whence, until labour, there has been no loss. Each flux is preceded by a few days' very severe headache, and is accompanied by much dorsal pain and very bad bearing-down sensations. She never has any leucorrhœa. When not pregnant, she has regular monthly catamenia; an abundant discharge every fortnight is therefore her test of pregnancy; this recurs fortnightly for four or five months after each labour; the menses then become natural. She has had seven children: all carried to full time, and born alive and perfect. When she was pregnant with her first, the hemorrhage was so copious that her medical attendant told her the pregnancy could not go on. It was not more abundant then than it has always been since. Treatment, position, and rest, had no influence; so she now takes no extra precautions during her pregnancies. She does not lose much after her confinements, and there are no ordinary indications of hemorrhagic diathesis. She is a stout plethoric woman, who says she "makes blood" very quickly, and that her mother used to be often bled with benefit, and died from apoplexy. I attended her in her last confinement, when I did not find anything unnatural. She objects to any local examination.—*Brit. Med. Journ.*, Nov. 29, 1873.

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[1] Die Krankhaften Geschwulste, B. III. p. 76.
[2] *Vide* a paper by Dr. W. Moore, in Dub. Quart. Journ., Nov., 1865.
[3] Deutsche Klinik, 1863.

62. *Obstinate Vomiting of Pregnancy, cured by Enemata of Bromide of Potassium.*—Dr. GIRABETTI has successfully treated the obstinate vomitings of pregnancy by enemata of bromide of potassium given in increasing doses; commencing with 6 grammes (about 92 grains) the first day, 8 grammes the second, and 10 grammes the third; after which the dose is lessened in proportion to the effect produced. In one case the vomitings were arrested by this treatment in three days.—*La Tribune Médicale*, 23 Nov. 1873, from *Rev. Méd.*

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63. *On the Hemorrhage that occurs during the Continuance of Pregnancy in Cases of Placenta Prævia.*—Dr. J. MATTHEWS DUNCAN, in an interesting article (*Edin. Med. Journ.*, Nov. 1873), maintains that the hemorrhages during pregnancy are accidental, not necessary, and that their occurrence is favoured by the extraordinary anatomical conditions existing in placenta prævia, as well as by other circumstances, some of which are known, as the increased pressure of the blood above what it would be were the placenta inserted high on the uterine walls.

I believe much harm has arisen from the custom of authors to treat unavoidable as quite distinct from accidental hemorrhage; whereas their whole pathology, though not identical, is very nearly so; and the study of them is made easier by so regarding them.

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64. *On the Spontaneous Separation of the Placenta when Prævia.*—Dr. MATTHEWS DUNCAN, in a paper read before the Obstetrical Society of London, Oct. 1, pointed out that during labour every portion of surface of the body of the uterus underwent contraction, and that it was probably to the same extent over the whole of it. But the lower part of the body of the uterus was greatly expanded during labour, and contraction could there be only in the meridianal or longitudinal direction. The contraction of the uterus in early labour did not separate the placenta, wherever it might be inserted, whether prævia or not. A small amount of the whole expansion of the cervix, or an early stage of it, when there could be very little contraction, was sufficient to detach partially the placenta. He arrived at the conclusion that the placenta when prævia was separated by expansion, not by shrinking or contraction of the uterus. At present it was universally held to be separated by uterine contraction. The paramount errors of authors, such as Simpson and Barnes, were in supposing that the placenta might be attached to the cervix even near the external os, which it never was, and in not rightly apprehending the behaviour of the cervix during labour. The process of detachment by expansion will go on till the internal os is dilated to a diameter of about four inches, and this may occupy a great part of the whole duration of the labour. Study of the shape of the lower uterine hemispheroid showed that a meridian leaves the vertex or centre of the internal os uteri in a direction nearly at right angles to the uterine axis; and that, after it has described an arc of one and a half or two inches, it becomes nearly parallel to it. At about two inches and a half from the vertex the diameter of the uterine cavity is four inches. There is no need for any considerable expansion beyond a diameter of four inches, which is reached at a meridianal distance of two and a half inches from the centre of the internal os uteri. Expansion beyond this would produce very slight extension of uterine surface, and consequently slight detaching power, which would probably be counterbalanced by placental expansibility. Dr. Matthews Duncan pointed out that this was the measure of the spontaneously detaching area, and criticized the various other measurements that authors had made. He showed that Barnes's estimate of three to four inches from the os uteri must be far too great. The circle of latitude, two inches and a half from the vertex, marking this limit was the line of insertion of the placenta within which constituted placenta prævia. Complete detachment of the placenta was to be explained by a study of the production of a caul, and of those cases in which the placenta was perforated by the advancing fœtus. Finally, Dr. Duncan called attention to the analogous detachment of the decidua around the internal os, which had been described by Dr. Haussman, of Berlin.

Dr. Barnes expressly denied that he was open to the charge of committing

the error imputed to him by Dr. Duncan of stating that the placenta was ever attached to the os uteri externum. He had taken special pains to insist that the cervical canal had nothing to do with gestation. He had even sent to Dr. Duncan years ago a tracing of a drawing made by himself from a pregnant uterus, showing the separate cavity of the cervix.

Dr. Aveling believed the Society was much indebted to Dr. Matthews Duncan for his accurate and scientific description of the spontaneous separation of the placenta when prævia. We could not be too minutely particular on a subject of such importance, and he believed, with the author, that there were many illustrations to be found in our midwifery works which gave the student an erroneous view of the relative conditions of the body and cervix of the uterus during pregnancy and parturition.—*Lancet*, Oct. 18, 1873.

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65. *Anticipation of Post-partum Hemorrhage.*—Dr. Ewing Whittle maintains (*Brit. Med. Journ.*, Sept. 27, 1873) that post-partum hemorrhage may be diagnosed beforehand by the peculiar pains during parturition, and being diagnosed may be prevented. The peculiarity of these pains is that they are "strong and quick: they do not gradually culminate into a strong pain and subside again, but they are sharp, quick, and cease almost suddenly; and the intervals between the pains are long in proportion to the length of the pains. In an ordinary case, for one or two hours before the completion of labor, the intervals will average about three times the length of the pains; *i. e.*, if the pains last each from fifty to sixty seconds, the intervals will average a little less than three minutes. Now, if the pains last each only from forty to fifty seconds, and are of the sharp character I have described, with intervals lasting five or six minutes, though the labour may proceed steadily and the head advance a little with every pain, you will be sure to have hemorrhage after delivery is completed, unless you anticipate it by altering the character of the pains, in making the pains longer and the intervals shorter. It is very easy to understand how this comes to be the case; the uterus is contracting sharply, and then becoming fully relaxed; after the child is born, a relaxation follows: one or two sharp pains expel the placenta with a gush of blood, and the uterus again relaxes, continuing the same tendency which existed before the delivery of the child."

In such cases Dr. W., as soon as the os is dilated, gives a full dose of ergot and if this does not improve the character of the pains at the end of an hour he repeats it. "In dealing with primiparæ, caution is required, first, not to administer ergot until the soft parts are pretty well dilated as well as the os uteri; and the drug should be administered in much smaller doses, as it sometimes acts with unusual energy in primiparæ. Generally, in about twenty minutes or half an hour after the ergot has been administered, the pains increase in length and frequency, and when the labour is over, the uterus maintains a good contraction. The ergot which I use is a liquid extract twice the strength of that of the *Pharmacopœia*, of which I give a teaspoonful when I think a full dose is indicated.

"I have pursued this practice now for more than twenty years. During this time I have attended 3750 labours, and among them I have had one case of *post-partum* hemorrhage; that case occurred about three o'clock one winter's morning, when I happened to have no ergot with me."

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66. *Case of Twins: one born at six weeks, the other at term.*—Dr. Cairns communicated to the Obstetrical Society of Edinburgh the following case of this.

"A woman who had borne five children, and previously had never had an abortion, sent for me one night about 12½ P. M. Labour-pains were evident. The mammæ were quite flaccid however, and no *areola* round the mammillæ; 'she had altered' about six weeks previously. The urine, so far as I could judge, was quite normal. She had had no morning sickness, and felt no desire for any particular food, but simply complained of pain in the 'belly.'

"When I called on the following morning, I considered it to be my duty to make a vaginal examination. I did so, and found something protruding from the 'os.'

"I immediately applied the dressing forceps, and removed what, on after-examination, turned out to be a fœtus of about six weeks old.

"Eight months after, I was called to the same patient, and delivered her of a fine healthy child."

Dr. Cairns said the case was of interest for two reasons. First, that it showed how one ovum might be thrown off at an early stage of pregnancy, while the other was retained till the full time. And, secondly, in a medico-legal point of view, it proved the difficulty of determining whether a child was legitimate or not, the husband being dead, and the wife having a live full-time child, after she had aborted.—*Edinburgh Med. Journ.*, July, 1873.

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67. *Digital Impression in the Cranium of a Fœtus during Birth, producing Epiletiform Seizures, etc.*—Dr. MATTHEWS DUNCAN relates an instructive case of this. A lady who had married late in life, and whose first labour had been difficult, attended with extensive rupture of the perineum, on her second labour came under the care of Dr. D. "At the proper time labour came on, and advanced naturally and quickly till the head was arrested at the outlet of the bony pelvis. The vertex presented in the second position at the outlet, lying nearly transversely. The pains were powerful, and for about two hours did not move the head in the least from its position. Owing to the absence of perineal obstruction, the head was easily felt, and its condition examined. It was jammed in its position. Manipulation of it was easily effected; and I proceeded, in the absence of pains, to rectify its position by pressure on the left parietal bone in front of the parietal protuberance. The bone was felt to yield under the pressure, which had, however, some beneficial effect—the head rotating slightly, so as to bring the occipit more directly under the arch of the pubes. Repeated examination showed me at the time that a digital impression was produced and persisted; but for three days I took no further notice of it, not expecting any notable evil to arise from it. The child was born alive soon after the attempts at rectification, and did well. It is now alive, plump, and happy.

"On the third day after the child's birth, the monthly nurse attracted my attention to twitchings of the face and superior extremities. She had then noticed them for the first time; and for about three weeks they grew gradually worse, occurring frequently during night and day, but not greatly interfering with efficient sucking, and little with sleep. The nurse alleges that the spasms at first affected the right side only. After three weeks or thereabout, the twitchings were not so severe, but they continued distinctly till the child was six weeks old; they then gradually disappeared, and now the child, being four and a half months old, has only some occasional awkward movements of the upper limbs, as already said. Bromide of potassium was given irregularly, four grains being generally administered during the day. The irregularities in its administration led to the mother and nurse observing a coincidence of lessened severity and frequency of the fits and the regular use of the medicine, as well as the reverse. The child is now perfectly well.

"At the end of a fortnight after birth the impression had distinctly flattened out; and it rapidly became less and less marked till about six weeks after birth, when its previous site could no longer be made out."

Dr. D. remarks: "Many individual observations and the researches of Dr. Arthur Mitchell have shown that difficult labour, and especially operative interference, is occasionally the cause of insanity in various forms. Injuries of the physical frame of the child during labour may lead to permanent corporeal disabilities, as is well known; but it should not be forgotten that the soft and rapidly growing head of the child may be the subject of injury producing irremediable and awful results, even when the child is born alive and apparently in good health, without visible injury, and even although it may for many months appear to be in every way a proper child. The delicate brain may sustain irreparable damage even from the compression and shearing it undergoes, in what would be called a common moderately severe labour which terminates spontaneously. Paralysis, epilepsy, imbecility, insanity, may thus be produced; and there can be no doubt that more definite physical injury by instruments is still more likely to have such baneful consequences.

"It may, indeed, be difficult in many cases to bring these ulterior results in

surviving children home to their real cause; but the subject is still novel, and very much may be expected from continued careful investigation of the matter.

"It is plain that all these results to which we have referred subtract from the reputed success of operations and interferences; and that, in future, they cannot with propriety be neglected in forming judgments as to the value of them—inquiries in which the present race of obstetricians are warmly interested and actively engaged."—*Brit. Med. Journ.*, October 18, 1873.

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68. *Injuries of the Fœtus by the Accoucheur.*—Dr. Cieślewicz, in an inaugural dissertation, has collected from literature and from the records of the hospital at Halle forty cases of fracture, fissure, contusions of nerves, lacerations of muscles, separation of epiphyses, etc., occurring to the fœtus as the result of interference in labour. Among the cases, are two of rupture of the longitudinal sinus. In the first, the delivery was effected easily by the forceps; in the other, the child was born after a labour of twenty-four hours' duration, without instrumental aid. In both cases, the middle and posterior cranial fossæ were covered with a membranous layer of blood, which partly covered also the hemispheres. The hemorrhage was traced to openings in the superior longitudinal sinus. In one, there was a single small aperture; while in the other there were several of various sizes.—*Brit. Med. Journ.*, Nov. 8, 1873, from *Centralblatt für die Medicin. Wissensch.*, July 12, 1873.

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69. *Spontaneous Reduction of an Inverted Uterus.*—In our preceding No. (p. 574–5) will be found a case of this rare occurrence, communicated by Dr. Hunt, of Belloit, Wisconsin. Another case of the same has been recently recorded (*Archiv für Gynäkologie*, vol. v., part 1) by Dr. Spiegelberg. The subject of it was æt. 40, in her twelfth labour, in whom inversion of the uterus followed the attempts of the midwife to hasten delivery by pulling on the body and umbilical cord of the child. Replacement of the organ was immediately attempted by the midwife; but, after a few fruitless trials, was given up. At the end of six weeks, a rather copious hemorrhage occurred; the uterus was found to be still inverted, and could not be replaced. Two and a half weeks afterwards, the patient came into hospital. The inverted portion was closely embraced by the os uteri; the part which was not inverted measured scarcely one and a half centimètre (about three-fifths of an inch). As the woman had a severe attack of diarrhœa soon after her admission, a fortnight elapsed before a second examination was made, with a view to reduction. Now, however, the uterus was found to be completely reduced. According to the explanation offered by Schatz, with which Dr. Spiegelberg agrees, the uterus was raised by the continued lying in bed, the round and broad ligaments accommodating themselves to the new position; and, during the diarrhœal evacuations, the vagina, with the vaginal portion of the uterus, was pressed down, while, the ligaments being unable to follow this movement, the fundus was raised.

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70. *Diagnosis of Subacute Ovaritis.*—Dr. Tilt read a paper on this subject before the Obstetrical Society of London, Oct. 1, 1873. He suggested that the undervaluing of the part played by subacute ovaritis, as a source of disease in women, partly depended on the lamentable facility with which many practitioners, wherever there was pain in the ovarian region, inferred the existence of ovaritis, partly on account of the real difficulties of diagnosis, of which he gave some remarkable instances. He intimated that another reason might, however, be found in the difficulty of making examinations in young unmarried women. He had found that the most frequent sexual diseases during this period of life (between fifteen and twenty-five) were subacute ovaritis and inflammation of the neck of the womb. When the disorders of menstruation resisted good hygienic and medical treatment, he believed they were generally due to subacute ovaritis and cervicitis. The symptoms of cervicitis he described to be the habitual painless passing of a moderate amount of muco-purulent vaginal discharge, with habitual pain in the back; those of subacute ovaritis were constant dull pain deep in the ovarian region, much increased by firm pressure, and extending to the thigh and leg, mammary symptoms, disturbed menstruation, and hysterical phenomena. The positive sign of subacute ovaritis was

the finding of an ovoid, smooth, or slightly indented lump beside the womb, or in Douglass's pouch, pressure upon which, caused by the practitioner's finger, or during coitus, caused an overpowering and sickening sensation of pain and debility. It might be necessary to confirm this diagnosis by a rectal or recto-vaginal examination. The author expressly stated that it would sometimes occur to a practitioner making a first vaginal examination that, instead of finding any ovarian disease, as he expected, he would detect cervical disease, and in other cases subacute ovaritis would be found when the symptoms would lead him to expect cervical inflammation. He concluded by describing the line of conduct to be adopted by the surgeon for the management of each of the three classes, and sketched the treatment most likely to cure them.

Dr. Barnes thought that many ovarian symptoms had their origin in uterine displacement.

Dr. Wynn Williams concurred in Dr. Barnes's opinion. He had rarely met with a case of ovaritis without some uterine complication, unless caused by direct violence, He believed the uterine mischief preceded the ovarian, and his experience taught him that on the removal of the uterine ailment the ovarian soon subsided. The same remarks applied to the ovary as to the testicle. Orchitis was seldom met with without previous inflammation of the urethra. He had frequently relieved ovarian symptoms by introducing a stem into the uterus, and he had under his care several unmarried females wearing stems and shields who could not be persuaded to have them removed, dreading a return of their sufferings.

Dr. J. J. Phillips said that his experience was that so-called subacute ovaritis was a very frequent cause of dysmenorrhœa, and he believed that this ovaritis frequently existed independently of any uterine flexion or peculiar conformation of the cervix uteri. It was very common to find a swollen, hyperæmic, probably inflamed ovary as the only evidence of disease in cases of dysmenorrhœa. The fact stated by Dr. Barnes, however, could not be controverted, that in a large class of cases dysmenorrhœa was due to uterine flexion or some uterine abnormality, and by appropriate treatment not only was the pain relieved, but also the congested state of the uterine appendages. A suitable selection of cases was, however, important, for some of the most troublesome cases of ovaritis had their origin in mechanical interference with the neck of the uterus by incision or dilatation.—*Lancet*, Oct. 18, 1873.

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71. *New Operation for Contraction of the Vaginal Orifice of the Neck of the Uterus.*—Dr. V. SABOYA records (*Revista Medico Rio de Janeiro*, Aug. 10, 1873) the following case. Having found by experience that in incisions of the neck of the womb, whether performed with the bistoury, the scissors, or Greenhalgh's hysterotome, it was sometimes difficult to preserve the desired degree of dilatation even when the cone of sponge was introduced after the method of Dr. Marion Sims, and that further, when the incisions were extensive and deep, serious hemorrhage might occur, he was induced, in a recent case, to modify the operation in the following manner.

He was called to a well-formed lady æt. 24, who had been married two years, had never conceived, but whose family were prolific, and her husband had children by a former wife. She menstruated regularly, though the discharge was scanty and accompanied with intense lumbar and pelvic pains, with prostration, nausea, and headache. She had a rather abundant leucorrhœal discharge.

On examining the uterus by the touch, Dr. S. found the vaginal part considerably elongated, having a length of about one and a half inch, conical in form, of normal consistence, and with the lips so placed that between them there was scarcely perceived a point in which the want of resistance showed that there was an external or vaginal orifice of the conical canal.

Combining the touch with pressure, he did not find any increase of volume in the organ, and the sound introduced with care penetrated three and a half inches without impediment, and without showing that there was any uterine deviation.

On using the speculum of Sims, he found the vagina of a well-defined red colour, bathed with a cream-like liquid, somewhat abundant, and of a sickening smell. The neck presented in the most prominent part a small circular orifice one-fifth of an inch in diameter, the circumference of which appeared slightly

excoriated. This orifice was full of a glutinous transparent mucus, that with difficulty could be drawn from the cervical opening, and which was renewed as fast as removed. The causes of sterility, Dr. S. remarks, are undoubtedly numerous, and the obstruction of the orifices of the cervical canal cannot be considered as an especial mechanical condition of this abnormal state; but he has observed, that when to this there is united considerable elongation of the neck, with an increased secretion of the glands of Naboth, or of the glutinous liquid that constantly obliterates the cervical canal, barrenness infallibly occurs; and thus, while the spermatozoa encounter difficulty in entering the neck of the womb, the menstrual blood accumulates in the uterus, distending the organ, causing painful contractions, with indications of reflex phenomena in various organs. The pains radiate from the womb to the neighbouring parts.

In any event to promote, at least, the sanguineous flow during menstruation, and to impede the accumulation of the liquid secreted by the glandular follicles of the uterus, any means tending to destroy the structure of the external orifice should be seized upon.

To effect this object hysterotomy had disadvantages in the tendency to cicatrization at the angles of the incision, and it occurred to him that if there could be first formed on each side of the external orifice, and at a small distance from it, two fistulous tracts, which should start from that point, and extend to the cervical canal, whose walls should be covered again with a cicatrized membrane, and without any tendency ultimately to union, the tissues included between the two fistulous tracts, and the orifice at the outlet of the cervical canal, might be afterwards cut on each side, without apprehension that union would occur in the angles of the incision.

To establish these fistulous tracts he availed himself of a tubular needle armed with metallic thread, and carried it at the distance of one-fifth of an inch from the small cervical orifice, and made the point pass out at an equal distance on the other side of the cervical orifice. After the metallic thread passed out, he seized the extremity of it with nippers and withdrew immediately the tubular needle. He then made a loop on each side to confine the thread while the fistulous tracts might be formed; and then availed himself ultimately of them to promote a division of the tissues, which they embraced, without danger of any hemorrhage. Then, having passed the wire, he carried the nippers into the cervical canal, and, seizing the middle part of the same wire, brought it out and cut it, remaining thus on each side of the cervical canal, within this orifice, where the wire had penetrated a metallic loop, the ends of which were slightly twisted, and there left until the tracts where they had passed should take the character of fistulous tracts.

Though using Sims's speculum, and although the neck of the womb was very accessible and held by a small hook towards the vaginal opening, nevertheless the passage of the wire was not very easy, on account of the great curvature that the needle had to make to pass from one side to the other of the neck, at a small distance from the external orifice. There was only an insignificant hemorrhage, and the wires that ought to remain for the space of fifteen or twenty days, have not in one week produced any inconvenience.

In a note from the author, forwarded by Dr. J. McF. Gaston, to whom we are indebted for the translation of this case, dated Rio de Janeiro, July 30, 1873, Dr. S. states:—

"My anticipations were completely realized. Without the slightest accident, the two loops were retained a month, during which, every eight days, they were twisted a little, until, finding that the walls of the canal through which they passed were so constituted as not to unite, these were removed, cutting at the same time the remaining tissues with a long and narrow bistoury guided by a director. I thus established the continuation of the fissure of the neck of the womb, this having an extension of half an inch.

"The operation was performed in February of the current year, and within a few days, having examined this lady, she informs us that she does not suffer any more from the troubles that formerly afflicted her, and that her menstruation comes regularly.

"I availed myself some two months ago of this same method of operating upon a woman that suffered from contraction of the neck of the womb, that had been operated upon by me some four years since by means of the in-

cision with the hysterotome of Greenhalgh, and in which, after some time, the contraction of the neck was reproduced in an aggravated form; and up to the present time the result promises to be favourable as in the first upon which I operated."

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

72. *Strychnia Poisoning cured by Atropia.*—Mr. S. BUCKLEY relates (*Edin. Med. Journ.*, Sept. 1873) an interesting case of this in a woman æt. 28, who had taken, at 4 P.M., strychnia, how much could not be ascertained, with a view to suicide. When brought to the Manchester Royal Infirmary, at 4.30 P.M., she was in a state of perfect opisthotonos, spasms painful and severe, and intervals short. The stomach was well washed out with the stomach-pump, and warmth applied to the body and feet. Chloroform was administered to relieve the pain of the spasms. As an antidote, 20 minims of liquor atropiæ, equal to $\frac{1}{6}$ grain of atropia, were injected three times at intervals of ten minutes. "Under this treatment a semi-comatose condition supervened, and after each injection the spasms were observed to become milder in character. At this period the heart's action was impetuous and irregular, the impulse extending over a large area; no bruit was heard; the pulse was 130, and fluttering in character. Respiration was hurried and slightly stertorous. The pupils were widely dilated; the eyes had a peculiar fixed and bright appearance; the face was flushed, and during the earlier paroxysms the risus sardonicus was well marked, but had not disappeared, the features being natural but immovably fixed. The patient appearing to be well under the influence of the atropia, it was given more cautiously and at longer intervals in doses of $\frac{1}{12}$ gr. The spasms, however, increased in severity whenever the injections were long omitted. Chloroform was also discontinued during the intervals, which now lasted about twenty minutes, and given only during the attacks, which had become much lessened in intensity, the opisthotonos having entirely disappeared. The last severe spasm was at 8.30, after which there appeared to be more co-ordination in the muscular movements. Slight spasms, however, came on if the patient was touched or moved in the least, and a rather severe one was induced about 9.30 by the nurse changing the hot-water bottle. At 12.30 A.M. she began to show signs of returning consciousness. The pulse was 90, full and regular; respirations easy, and 22 per minute. She was with difficulty roused, and answered questions loudly spoken in a vague and muttering manner. After a time she swallowed a cupful of hot strong coffee, deglutition appearing painful. She fell asleep at 1.30, and shortly after was left to the care of the nurse. At 9 A.M. she suffered no inconvenience, beyond a feeling of uneasiness about the throat. The day following she complained of stiffness and pains in the joints. The urine was loaded with lithates for three days, and then became clear. She left the hospital completely recovered from the effects of the poison. . . .

"This case is interesting, in the first place, on account of the well-marked antagonizing effects of atropia over the tetanic spasms produced by strychnia; in the second, that the large doses of so poisonous an alkaloid produced no ill effects, it being remarkable that no less than $1\frac{1}{2}$ grain of atropia (140 min. of the liquor atropiæ B. P.) was given during the case, and that $\frac{1}{6}$ of a grain is known to have proved fatal in a case of poisoning by atropia. That the favourable results now related were due to the atropia solely, was evident by the immediate diminution in the number, duration, and intensity of the spasms following each injection, gradually regaining their strength after the lapse of a certain interval, each interval becoming longer as the case progressed. Although the chloroform was almost continuously administered during the earlier paroxysms, the mitigation of the symptoms only showed itself upon the injection of the atropia. . . . .

"The state of the patient on admission being apparently hopeless to all who saw her, the atropia was boldly pushed, and might perhaps have been considered to an unjustifiable extent, had the case terminated fatally; but the effects in counteracting the symptoms being so marked, and seemingly within control, its continuance was deemed perfectly warrantable, and met with the happy result here detailed."

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Hydrate of Chloral and Bleeding in Puerperal Convulsions.—By P. J. ROEBUCK, M.D., of Lancaster, Pa.

Mrs. B., æt. 22, about eight and a half months in her first pregnancy, was attacked, on the 23d of January, 1873, at 5 A.M., with violent convulsions, without any premonitory symptoms. Dr. H., who was called, arrived at 7 A.M., the patient having had at least three attacks previously. The doctor took sixteen ounces of blood and administered ½ gr. of sulphate of morphia; vomiting soon followed; pulse 80 per minute. The bleeding was repeated at 8 o'clock, and another ½ grain of morphia administered. Vomiting again followed. The spasms slightly abated; pulse continued at 80 per minute. At 10 A.M., I saw the patient in consultation. She was entirely unconscious and the convulsions returning every twenty or thirty minutes, each fit lasting from ten to fifteen minutes. Pulse 80 and pupils fixed.

Although the patient had given no evidence of uterine contractions and was not considered in labour, a vaginal examination was made; it was ascertained that the mouth of the womb was not dilated, but the wall of the vagina was found well lubricated and flaccid. I suggested the use of hydrate of chloral in 30 gr. doses, repeated every half hour, and increasing the quantity 50 per cent. each dose until a decided effect was produced. Thus I left the patient in charge of the attending physician, to return by his request at 4 P. M., when I found pulse 100 per minute (increased from 80), convulsions lasting longer, intervals shorter, and pupils fixed. I was informed that the dysphagia was so great that only a fractional dose of chloral could be given at long intervals. I now insisted upon the use of chloral by the rectum; 70 grains were injected at 5 P. M., effectually arresting the convulsions. At 5½ P. M. the pulse was 110, and at 6 o'clock 120 per minute. Although unconsciousness remained, labour-pains commenced at 6 o'clock, and by 8 A. M. the lady was delivered of a living child.

Consciousness did not return until the following day; partly conscious at 12 M. on the 24th, and entirely so by 6 P. M., when for the first time she realized that she was a mother.

Upon testing the urine, a large excess of albumen was found, traces of which remained until (not after) the eighth day after delivery.

Hydrate of chloral having effectually arrested the convulsions after failure of the lancet, I believe that, although bleeding may be the very best and in certain cases the most reliable remedy, it is not so in all. Where albuminuria exists, I have no confidence in the lancet, and would at least first give the hydrate a fair trial to the exclusion of all other remedies, and would prefer administering it by the rectum.

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Lead Poisoning; Eight Persons Victims of Colica Pictonum.—By T. A. O. EARLE, M.D., of St. Johns, N. B.

About eleven P. M., June 9th, I was called to a family said to be

suffering from cholera or some dangerous poison. I went to the scene as soon as possible, and found six men stretched on the floor of a large room, vomiting and suffering excruciating pain. The pulse was feeble, slow, and irregular; skin moist and cold; pupil of eye normal; bowels constipated. I at once administered alcoholic stimulants, and as it was evident some irritant poison "was at work," I gave the whites of eggs and milk freely, also ol. ricini. In about half an hour they rallied somewhat, and I then gave each "liquor opii sedativus" (Battley) ♏ x, which relieved the pain. I now searched the house thoroughly for poison, examining the edibles and also the spring from which the water was obtained, but could find no clue to the mystery. No rooms had been newly painted, and there were no new pails about the establishment. I had despaired of solving the mystery, when one of the women asked me if lead boiled in a teakettle could be the cause of the trouble. On examining the teakettle I found the bottom and sides were coated with lead. She then gave me the following statement: About ten days before, the men had used the kettle to melt lead to pour into the journals of some mill machinery, and, without washing it, had continued to use it for some culinary purposes, and the lead taken up by the boiling water gradually accumulated in their systems, causing the symptoms of poisoning. The next morning the two women were seized with the same disease, thus including the whole family who lived in the same house. The treatment consisted of sulphate of magnesia and dilute sulphuric acid with sufficient opium to relieve the pain. All the cases are recovering.

27 UNION STREET, ST. JOHNS, N. B.

Case of Poisoning by Impure Nitrate of Bismuth.—By H. S. FULLERTON, M.D., of Hillsborough, Ohio.

A physician in a neighbouring State had occasion to place himself upon a treatment of subnitrate of bismuth. After a day or two he became aware of puffiness about his eyes and gastro-intestinal irritation. These symptoms soon became so pronounced that, knowing of no other possible cause for them than the bismuth, he discontinued its use, whereupon they subsided, but reappeared upon renewal of the medicine. He then submitted samples of the bismuth to a chemist, who, upon analysis, detected the presence of a formidable proportion of arsenic.

The explanation is, of course, easy, as arsenic is always found in nature in union with bismuth, and much care is necessary to eliminate all traces of the poison in preparing the latter for medicinal use. That which he was taking had not been thoroughly purified.

[DR. L. HEBERT records (*Le Movement Medical*, Nov. 22, 1873) the case of an infant to whom the subnitrate of bismuth was given for a severe diarrhœa. Instead of being benefited by the remedy, the child presented symptoms of poisoning; on analysis the medicine was found to contain arsenic.—ED.]

Case of Triplets: Profuse Post-partum Hemorrhage. By CHARLES C. SHOYER, M.D., of Leavenworth, Kansas.

Mrs. L., æt. 44, mother of six children, fell in labour and was delivered of a child by a midwife. There being another child; after waiting for its delivery four hours without success, I was sent for. Examination revealed tense membranes, which I ruptured, and shortly a second child was born, and in half an hour a third. My hand on the abdomen followed the uterus as the placenta was expelled, and held it firmly for about twenty

minutes. Ergot (Tilden's fluid extract) was given to ℥j, and I was about to apply the binder when I felt the uterus fill up, becoming quite large, and this too notwithstanding I held it with both hands. I turned out a large basinful of clotted blood; gave ergot freely, applied cold, and again grasped the uterus with both hands and held it firmly, but in a short time it again filled and became as large as before. The patient grew weak and vomited, and her pulse was rapid. I now gave thirty drops of tincture of opium, and determined to let the *clots remain* in the uterus and so seal the vessels up; applied the bandage firmly and waited. There was no further hemorrhage, but in a few days grumous blood flowed and occasionally small clots. In a week the uterus contracted, and was no larger than after an ordinary labour. I publish this case because the treatment was contrary to that ordinarily recommended.

DOMESTIC SUMMARY.

Athetosis.—In a short paper on this subject, read before the Medical Library and Journal Association of New York, Dr. William A. Hammond remarked (*Med. Record*, July 1, 1873) as follows:—

There are several diseases, one of the chief manifestations of which is involuntary movement—the consciousness of the patient remaining intact. But that which I am about to bring to the notice of the Association had certainly never been recognized or discriminated from others somewhat similar till the publication of my *Treatise on Diseases of the Nervous System*, in which work I described it under the name of athetosis, and gave the details of two cases, one of which had come under my personal observation. Since then other cases have been noticed both in this country and in Europe, and the affection has been generally regarded as being entitled to a separate place and as being distinct from any hitherto known to exist as a pathological entity.

The name athetosis is derived from the Greek Ἀθετος (without fixed position), and is specially applied to designate the chief phenomenon of the disease, which consists in an inability to keep the fingers and toes from continued motion. The movements are not disorderly, like those of hysteria and chorea, nor so tremulous as those of paralysis agitans, and the various forms of sclerosis hitherto described. They are regular, and are to some extent under the control of the will—that is, by a strong effort of volition the patient can for a short time prevent them, but they soon reassert themselves, notwithstanding his most strenuous endeavours to keep the muscles quiet. Even during sleep the movements continue.

In two of the cases which have come under my notice, and of which I have complete histories, there were in the first instance paroxysms of epileptiform character. In a case which I exhibited to the class of the Bellevue Hospital Medical College last winter there had been no such attacks. They were not observed in Dr. Allbutt's case, nor in two which are now under my care.

The involuntary movements which occur in the fingers and toes are not simple oscillations, such as are present in paralysis agitans and sclerosis of the brain and spinal cord, but are slow, and are apparently performed with deliberation. The thumb and little finger are more affected than the other fingers. Owing to the constant exercise, the muscles of the forearm become greatly enlarged and hard, like those of an athlete.

Pain is very generally complained of in the contracting muscles, and in one case caused very great distress.

The sensibility of the skin over the affected parts is lessened, and a feeling of numbness prevails more or less extensively over the side of the body corresponding to the disordered motility. In all other parts it is normal.

The causes of the disease have not been clearly made out as yet. In two of my cases the patients were intemperate, as was Dr. Hubbard's case, but Dr. Allbutt speaks of his patient as a "temperate woman." Thus far, of the six cases known to me, two have been women.

Relative to the prognosis, no case that has come to my knowledge has been materially benefited by treatment, but death has not yet ensued in any instance. I am disposed to regard the disease as being slow in its progress, but as not being amenable to the action of remedial measures. In each of my own cases there has been a steady advance in the severity of the peculiar symptoms, but the general strength of the patient has not been materially impaired.

If attention be paid to the situation in which the disease is manifested and to the character of the movements, no difficulty will ordinarily be experienced in arriving at a correct diagnosis.

Comminuted Fracture of the Clavicle; Compression of the Subclavian Vein and Subjacent Plexus of Nerves by a Fragment.—Dr. H. W. BOONE, Assist Surg. U. S. A., reports (*Med. Record*, Nov. 15, 1873) the following interesting case: Charles W., native of U. S., age 28, a tavern-keeper, a large, powerfully built man, in robust health. On the 11th of February, while he was driving a pair of horses, they took fright and threw him out; he landed on his right shoulder with great violence, striking against the string-piece of a bridge. When he applied for treatment, three hours afterwards, I found that the clavicle was broken and comminuted about at the middle portion. One fragment, about an inch and a quarter in length, was tilted so as to lay transversely between the two larger ones; there was much deformity.

The arm was cold, and there was considerable swelling of the veins; no sensation in forearm or fingers, while the patient complained of pain at the seat of the fracture. The patient was placed in bed with his head and shoulders low, and his arm was supported by a pillow. Efforts were made to alter the position of the inverted fragment, but proved ineffectual. The arm was secured to the chest by a strip of adhesive plaster round the body; the whole limb was then enveloped in cotton batting and covered with a light blanket, and the room was kept at a warm, even temperature.

On the following day there was considerable swelling about the neck and shoulder, with some extravasation of blood, the arm was much swollen, and there was no sensation in the hand or fingers.

Feb. 13th. The swelling has increased very much; some incisions were made in the upper part of forearm and in the arm; warm-water dressing applied. From this time the case did well, the swelling gradually going down, and after some weeks he returned to his usual occupation. There is some decrease in the width of the right shoulder, and it is lower than the other. He has good use of his arm, however, and it appears to be quite strong. The deformity in the clavicle is quite prominent. A sensation of numbness in his hand and fingers remained for some time, but has ceased to trouble him. In this kind of fracture the fragments may cause great injury by pressing upon or lacerating the subclavian vein and the brachial plexus or by wounding the artery. These results appear to be uncommon, although the late Sir Robert Peel is reported to have died from a laceration of the subclavian vein.

It has occurred to me that in a case of this kind it might be good surgery to cut down upon and remove the offending fragment, where there seemed to be any danger of its wounding the artery or vein. This would of course render the fracture a compound one, but with careful dressing no serious trouble need be apprehended, and the greater danger would be removed.

[In the *British Medical Journal* for June 7, 1873, Mr. ERICHSEN reports a case of similar injury, in which death resulted from gangrene of the arm.

Mr. Erichsen, in commenting upon his case, says that it "serves to illustrate a particular danger [gangrene resulting from compression of the subclavian vein] that may follow fracture of the clavicle; and the question presents itself, What ought to have been done if the condition of things had been diagnosed? In cases of fracture from direct violence, I should not employ the axillary pad, or even apply a bandage at all, but simply put the patient to bed and support the

shoulder. I should leave the parts quite alone, and let the fragments unite as they best can, moulding them afterwards as opportunity offered. The plan of bandaging the fingers separately, and then the arm as far as the lower border of the axillary pad, may be followed by bad results, for if there be congestion it may escape notice, and such congestion may go so far as to strangle the limb under the bandage. If the fingers, hand, and forearm be bandaged at all, it should be done lightly and openly, so that you may not be prevented from seeing what is taking place in the limb."]

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Bony Anchylosis successfully treated by Subcutaneous Division of the Neck of the Femur.—Dr. H. B. Sands records (*N. Y. Med. Journ.*, Dec. 1873) a case of this. The subject of it was a man æt. 25, with anchylosis of right hip-joint, the result of rheumatism. The thigh was considerably adducted and flexed at an angle of 110° with vertebral column, and patient could not rest his right foot on the ground. The operation was performed Feb. 12, 1872, in the following manner: "A long, straight, narrow bistoury was thrust through the soft parts just above the great trochanter, and carried directly in front of the cervix femoris, so as to separate the soft parts from this aspect of the bone. The knife was then withdrawn, and a narrow saw (such as the one devised by Mr. Adams), an inch and a half in length, and having a long slender shank, was introduced along the track made by the knife, and the neck of the femur divided. The bone was exceedingly firm, and nearly twenty-five minutes were required to complete the section. Very little blood was lost during the operation; and the external wound, which was hardly three-eighths of an inch in extent, was dressed simply with a piece of lint, a strip of adhesive plaster, and a spica-bandage.

"After the bone had been severed, it was found necessary to divide the tendons of the adductor longus and the tensor vaginæ femoris. When this had been done, the thigh was immediately and readily extended to a right line with the body. The patient was put to bed, and the limb kept extended by a weight attached to the foot. No inflammation followed the operation; and, on the tenth day, when the dressings were removed, the wound was found to have healed completely, and without suppuration.

"The patient was confined to bed for six weeks, in the hope of obtaining bony anchylosis in the straight position; but, as it was found, at the end of that time, that the parts remained freely movable, he was permitted to get up, and to move about the ward on crutches. Meanwhile, the right limb, which, immediately after the operation, was of equal length with the left one, was found to have shortened a quarter of an inch."

When discharged, April 29, he was obliged to get about on crutches. During the following winter he had another attack of rheumatism, most severe in right knee, which resulted in anchylosis of that joint. Dr. S. reports that since May he has been steadily improving in general health, and has acquired the power of locomotion to a useful degree. He can walk without the assistance of a cane, but his gait is then awkward and unsteady, owing, he says, rather to a weakness of the knee than of the hip. With the aid of a cane, however, he walks quite well, and, for distances not exceeding a mile, without fatigue. The affected limb is three-quarters of an inch shorter than its fellow, and the existence of a false joint is plainly demonstrable. He sits with ease in the upright position, and, while standing erect, can cause the right foot to move as follows: forward, twenty-two inches; backward, nineteen inches; inward, thirteen inches; and outward, fifteen inches. In making the movement of adduction, he is able to bring the limb across the opposite knee. Rotation, to about its normal extent, can be easily effected by passive motion, but the patient has very little voluntary power in producing this movement. In walking, the foot is naturally everted. To what extent further improvement is possible cannot, of course, at present be determined, yet the patient is steadily gaining, and expresses himself highly pleased with the result already obtained.

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Local Treatment of Venereal Ulcers by means of Iodoform.—Dr. G. O. Morrison-Fiset, House Surgeon to the Charity Hospital, New York, reports

(*Medical Record*, Oct. 15, 1873) that the great efficacy of this drug, as shown by the results obtained in the Charity and other hospitals, will make it almost indispensable as a therapeutic agent in this class of cases. For many other forms of ulceration but the venereal, iodoform has been found to act well; and in chancroids or syphilitic ulcerations it is one of the best agents to use. In the Charity Hospital the chancroid, when first seen, is usually cauterized with nitric acid, if it be simple and of medium size, covered with a tenacious and abundant yellowish secretion; if, on the contrary, it be small and its secretion slight, no cautery is applied. For phagedenic cases the actual cautery is generally employed. One application of the potential cautery is usually sufficient to destroy the virus. As soon as the slough caused by the cauterizing agent has separated, the application of the iodoform (either once a day, every other day, or twice a week, as the case may be) to the surface of the sore is commenced.

Iodoform may either be applied in form of powder, or suspended in glycerine, as in the following formula: R. Pulv. iodoformis, gr. xlv; glycerinæ, ℥iij; alcohol, ℥j. M.

The powder, when used, is simply dusted upon the ulcer with a camel's-hair brush, after carefully removing all secretion present. If situated on the glans penis or prepuce, a piece of lint is placed over it to separate the diseased from the healthy parts. If the iodoform be used suspended in some menstruum, a dossil of lint is dipped into the mixture and applied to the ulcer. The former method is preferable, the powder adhering to the surface to which it is applied; but if used in the other way, it is apt to slip from the surface of the ulcer, especially in cases of chancroids of the vulva. The sores are also directed to be washed with a solution of carbolic acid (℥j to Oj) before the application of the iodoform is made.

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Liebreich's Operation for Cataract.—Dr. W. GASTON BULLOCK advocates (*Charleston Medical Journ.*, Oct. 1873) this operation. He says he has performed it six times, with only one failure, and in that he had repeatedly refused to operate on account of the cachectic state of the patient, who had albuminuria and his system charged with malaria. He finally yielded to the importunity of the patient, and the failure was not unexpected.

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Production of Painless Incisions without Anæsthetics.—Prof. EDMUND ANDREWS remarks (*The Medical Examiner*, Nov. 15, 1873) that "mechanical injuries received from bodies moving at a high velocity are painless." Reflection on this fact has induced him to commence a series of experiments to determine whether it is possible to devise an instrument small enough for convenience in surgery, and swift enough to cut without pain. These experiments have not yet been fully successful; but their results give hope that further research will enable us yet to introduce into surgery the important improvement of *anæsthesia by velocity*. Prof. A. describes a knife he contrived with this view, but he failed to impart to it sufficient velocity. "It is worthy of question," he says, "whether, for very high velocities, a small circular saw would not be the best cutting instrument. Experience in the packing-house shows that, at two hundred feet in a second, a saw cuts beef more smoothly than a knife, so that the wound made by it in living tissue would probably unite by first intention without difficulty; and the fact that each tooth takes away, with the velocity of lightning, its little particle of flesh, without shock to surrounding parts, would probably be favourable for painless action. The difficulty of giving this rapid motion to a saw carried on a portable handle is very great; however, I have in progress some experiments which will at least settle the value of the principle, and may, I hope, result in a useful addition to our surgical resources."

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Vaginal Ovariotomy.—Dr. J. T. GILMORE, Prof. of Surg. Ala. Med. College, reports (*N. O. Med. and Surg. Journ.*, Nov. 1873) a case of this in which he operated Sept. 6. The subject of it was a married woman 48 years of age, who had suffered for many years from pain in the ovarian region. During the past year she had menstruated but twice; for several years she had anteversion

and endometritis, which still existed. A tumour as large as an orange could be felt in the retro-uterine space. The woman was an opium-eater, and her health so damaged that Dr. G. believed that abdominal ovariotomy would prove fatal. He therefore determined to adopt Prof. Thomas's plan of vaginal ovariotomy. The patient consented, and Dr. G. proceeded as follows: "I placed her in Sims's position, and after introducing Sims's speculum, seized the posterior lips of the cervix with a *Museux* forceps, and drew the uterus gently forwards and downwards. I then carried the index finger of the left hand into the rectum, and the same finger of the right hand into the vagina. I found that by this manœuvre I had a vaginal space of 2½ inches through which to enter the abdominal cavity. I then introduced the speculum, the patient being all this time chloroformed, and the bowels having been thoroughly emptied by a purgative dose of castor oil. With a long-handled tenaculum I seized the vaginal mucous membrane, and examined carefully to determine the absence of all pulsating vessels. Being satisfied on this point, with a pair of curved scissors I divided the structures embraced by the tenaculum longitudinally, extending from a few lines posterior to the uterus to within a few lines of the rectum. I then awaited the cessation of all oozing of blood. Then I carefully explored the line of the wound, some two inches in length, and found myself down upon the peritoneum. By making firm pressure in the direction of the body of the uterus in the incision, I found that the rectum was out of the way, and with a small-pointed tenotome I punctured the peritoneum. This puncture I enlarged sufficiently to admit the index finger. The opening into the peritoneum I then enlarged, so as to correspond with the external cut. I then readily introduced the index and middle fingers of the right hand. I found I could explore the pelvic cavity—could readily feel the fundus of the uterus. I embraced the tumour between the two fingers. After pressing firmly upon the lower part of the abdomen, and having brought it down until its lower part presented at its incision, it could be distinctly seen to be a cyst. One of my assistants, Dr. J. M. Collins, punctured it with a tenotomy knife, and evacuated its contents partly: when thus lessened, it escaped through the opening. By drawing upon the cyst, I dragged out the ovary, from which it grew by a peduncle. The ovary contained a cyst the size of a small marble; and the Fallopian tube, which could be felt before the abdominal cavity was opened, was brought out with the cyst, its fimbriæ being spread over the large cyst. The peduncle of the large cyst was about one inch and a half in length. With all these structures well drawn down into the vagina, I proceeded to effect their removal, by first using Nott's rectilinear clamp. I passed it up in front of the cyst, and embraced a portion of the broad ligament and Fallopian tube. After screwing it tightly down, I removed it, and applied at the crushed point a waxed silk ligature; then with a curved pair of scissors I removed the whole—the left ovary, the cyst, and the Fallopian tube—leaving a stump sufficient to prevent the slipping of the ligature, which I left hanging out of the vulva, and to the distant end of which I tied a piece of cotton to prevent it, perchance, from slipping into the abdomen. I finally closed the vaginal opening with three silver sutures. I passed one of the sutures through the pedicle, so as to keep the distal stump to the ligature in the vagina."

The patient recovered by the 20th of September, at which date she menstruated.

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Ovariotomy.—Several cases of this operation are recorded in recent American medical journals which present points of special interest.

Dr. J. C. Reeve reports (*The Clinic*, Nov. 8th) a case occurring in an unmarried woman æt. 17, otherwise in good health, upon whom he operated Sept. 30th. An incision at least eight inches in length was made. Adhesions existed to the walls of the abdomen, but neither close nor difficult to detach. Five cysts were emptied in all. "Upon getting the tumour out of the abdominal cavity the pedicle was found, a long loose leash of vessels already partially stripped from the surface of the tumour. This had undoubtedly occurred from rolling the tumour over in different directions to bring the cysts forward for emptying, and in its final escape from the abdomen, or both combined, and may seem as if imprudent force had been used, yet no strain upon the pedicle

was at any time felt. I immediately recognized the fact that I had unconsciously advanced in the process of enucleating the tumour, as first proposed by Dr. Miner, of Buffalo, and the pedicle was then further stripped and peeled off except at one point, where a ligature was placed around a small portion and this divided. I might have thus left it, or perhaps even without this small part ligated, and probably with safety, but I confess my courage failed. In one portion was a vein as large as the handle of a penholder, and upon reflection, I decided to transfix and tie the pedicle in two portions and cut off several inches of the ragged ends. After thorough and careful sponging of the abdominal cavity, and waiting for all bleeding to cease, and after ascertaining that the left ovary was in a healthy condition, the abdomen was closed with silk sutures passed through the peritoneum. The cut end of the pedicle was retained in the abdominal wall by two of the sutures being passed close to it; in other words, the pedicle was 'pocketed.' A piece of linen wet in warm water was laid over the wound, some cotton batting similarly moistened above that, then more dry cotton, a piece of rubber cloth above that, and a flannel bandage pinned over all, and she was carried to bed in just an hour from the time of beginning.

"She was carefully nursed, and made a speedy recovery."

Dr. T. E. CRAIG reports, in the same journal, a case of an emaciated, delicate, anæmic girl aged 17, with abdomen enormously distended with fluid and also dropsical effusion of lower limbs. The patient was repeatedly tapped, and on the 23d Sept. Dr. C. operated. Numerous adhesions were found which were carefully broken up, and then the entire mass was drawn out of the abdomen. "This brought into view the pedicle of the tumour, consisting of the right Fallopian tube, together with a broad fibrous band that seemed to be continuous with the capsule of the tumour, and which was reflected inwardly to the uterus, bladder, and intestines, and outward and backward to the right iliac fossa." Dr. C. intended to clamp the pedicle, but at this time he thought that he would endeavour to *enucleate* the tumour as recommended by Dr. Miner. "In order to do this, I passed my finger through the centre of the pedicle close to the tumour, and gently separated it from the cyst, following out the vessels to their final termination. The last portion of the pedicle that I was separating broke off too soon and a small artery bled a little. This I could have secured by twisting, but I preferred using the catgut ligature. I then sponged out the abdominal cavity well and carefully; closed the incision with silver pins and intermediate silk sutures, supported by adhesive straps passed around the body, and placed the patient in bed, wrapped in a warm blanket. Not to exceed three ounces of blood were lost during the operation." The case progressed rather favourably until the 28th, when violent peritoneal inflammation set in and she died the next day.

A case of ovariotomy in which drainage through the cul-de-sac of Douglass was employed is reported (*Med. Record*, Oct. 1, 1873) by Dr. ALEX. J. C. SKENE. The subject of the case was æt. 30, married. The operation was performed March 15, 1873. The abdominal walls were very much attenuated and the sac closely adherent. "While trying to separate the two, the sac was opened. A trocar was passed into the sac through this opening, but the contents would not flow out. Two or three pins were passed through the edges of the opening of the sac, and a ligature carried around under them. This closed the wound in the sac. The incision was enlarged sufficiently, when adhesions were found all over the abdominal walls anteriorly and laterally. The omentum was also firmly adherent to the tumour. The adhesions were broken down with considerable trouble. Rather free hemorrhage followed, which required the use of persulphate of iron to arrest. The pedicle (a small one) was transfixed with silver wire, ligated in two halves, and dropped back into the pelvic cavity." A drainage tube was then introduced by means of an instrument devised by Dr. S., consisting of a trocar eight inches long and curved at the pointed ends to correspond to the axis of the pelvic cavity; and a canula 2¼ inches long made to fit the curved end of the trocar. "About one inch from the upper end of the canula two pieces of silver wire are attached, one on each of the straight sides. The canula, from these wires upwards, is perforated all round with small holes.

"The canula has a screw-thread cut inside of its lower end, so that another tube can be attached to it. A small piece of tube, about half an inch long, has a thread cut on its outside, which fits into the thread in the lower end of the canula; at the other end of this tube there is a small flange, made suitable for the attachment of a piece of rubber tubing.

"This short piece of tube, with the rubber tube attached, is screwed into the lower end of the canula, after it is introduced through the sac of Douglass into the vagina." This drainage tube was introduced as follows:—

"The operator stands on the left side of the patient. The trocar and canula are held between the first and second fingers of the right hand (the trocar being withdrawn a short distance to protect its sharp point). In this way the instrument is carried down to the most dependent portion of the sac of Douglass. A little pressure is then made on the handle of the trocar, sufficient to engage the point in the tissues. The handle is then seized in the right hand, and the first and second fingers of the left hand carried up into the vagina until the point of the trocar can be felt. While counterpressure is made with the fingers of the left hand, the trocar and canula are thrust through from the sac of Douglass into the vagina. The canula is seized between the fingers of the left hand, and held in place while the trocar is withdrawn. The left hand is then removed from the vagina, and the upper end of the canula held in place with the two fingers of the right hand, care being taken to see that the two wings of silver wire projecting on each side of the canula are made to rest on the floor of the sac of Douglass. An assistant then introduces a bivalve speculum and exposes the lower end of the canula, and having the other tube ready, he screws it into the canula. The speculum is removed, the rubber tube cut off at the requisite length, and the operation is complete.

"When the tube was introduced the rubber portion was cut off at the ostium vaginæ, so that the labia majora closed over the end of it. While the abdominal wound was being closed, bloody serum began to flow from the tube in small quantity. This discharge from the tube continued during the afternoon and night of the 15th. From about four o'clock until eight on the morning of the 16th no discharge occurred. Fearing that the tube might have become closed by a blood-clot or other obstruction, I injected about one ounce of artificial serum. The discharge soon after that returned, and continued perceptibly through the day and into the night. On the morning of the 17th, the flow was quite profuse for about an hour, during which time three large napkins were saturated with a dark, reddish-brown fluid. When this free flow subsided, a small red spot of fresh blood was observed on the napkin. Several more stains of the same kind were noticed through the day. This led me to suppose that she had begun to menstruate, but this was proved not to be the case by first washing out the vagina and finding that clear water returned; and then washing out the tube, which brought away some fresh streaks of blood.

"On the 18th the discharge of the same fluid was quite free; on the 19th and 20th it was scanty; there was no fluid at all on the 21st; during the 22d day there was a scanty flow of light-coloured serum; on the 29th day, and the fourteenth day after the operation, the tube was removed. The patient was placed on the left side and Sims's speculum introduced; the lower end of the silver tube was seized by the forceps, and while traction was made the vaginal wall was pushed backwards by the first and second fingers placed one on each side of the tube. This pressure upwards of the vagina with the fingers caused the flexible little wings of silver wire (which retained the tube in place) to be folded up along the side of the tube, so that they offered no great resistance to the removal of the tube. The opening made by the tube healed up very promptly."

At the end of twenty-four days after the operation the patient was able to attend to her household duties.

Forcible and Rapid Dilatation of the Cervix Uteri for Constriction of that part.—Dr. John Ball gives the following description of the treatment he has found satisfactory in cases of constricted cervix uteri.

"My method of procedure is first to evacuate the bowels pretty thoroughly beforehand, so as to prevent all effort in that direction for two or three days; I then place the patient upon her back, with her hips near the edge of the bed, and, when she is profoundly under the influence of an anæsthetic, I commence by introducing a three-bladed, self-retaining speculum, which brings in view the os uteri, which I seize with a double-hooked tenaculum and draw down toward the vulva, when I first introduce a metal bougie as large as the canal will admit, followed in rapid succession by others of larger size until I reach No. 7, which represents the size of my dilator. I then introduce the dilator and stretch the cervix in every direction, until it is enlarged sufficiently to admit a No. 16 bougie, which is all that is generally necessary. Then I introduce a hollow, gum-elastic uterine pessary, of about that size, and retain it in position by a stem, secured outside of the vulva, for about a week, in which time it has done its work, and is ready to be removed.

"During this time I keep the patient perfectly quiet, and usually upon her back, which is generally found to be the most comfortable position.

"The effects of this operation seem to be threefold: First, by breaking up all the adhesions, which are often very firm and unyielding, it relieves the constriction entirely, and, acting as a derivative, it cures the hyperæmia of the cervix; and, further, it establishes a radical change in the nutrition of the whole organ. For instance, I have operated upon patients who had suffered for years from chronic endo-cervicitis, and when the most gentle touch of the finger would cause excessive pain, when in a few days the sensibility would all be gone, sometimes even before the pessary was removed.

"In cases of flexion the relief is obtained by the straightening of the canal, which is produced by a change of the muscular tissues of the cervix from an abnormal to a normal condition. In the rapid dilatation of the parts, the constricting fibres are, of course, lacerated to some extent; and in healing up around the pessary, must necessarily conform to their new relation. It was in seeking a remedy for this condition that my mind was first directed to this mode of operation; and, finding the relief so prompt and so effectual, and so safe also, I have been led to adopt the same treatment in all troublesome cases of constriction of the cervix uteri, whether complicated with version, or flexion, or otherwise; and the results have been so gratifying that I take great pleasure in laying them before my professional brethren.

"It would be unreasonable to expect success in every case, and under all circumstances, yet I do claim for it a certainty hitherto unattained; and it has this one great advantage, viz., the saving of time, as in my hands it will accomplish more in a less number of weeks than it would take months to do by the ordinary methods. And, according to my own experience, it causes much less constitutional disturbance than the use of tents; and I think it safer even than the metrotome, and free from some serious objections to the use of the latter; as, for instance, when incisions are made through the tissues of the cervix, unless carried deep enough to prevent reunion, they must of necessity form a cicatrix, which will interfere, more or less, with the dilatation of the parts. And, when the operation does not succeed, the patient is left in a worse condition than before; while, in the rapid and forcible dilatation of the cervix, there is no sacrifice of the integrity of the parts, and, being done under the influence of an anæsthetic, there is no shock of the nervous system, and generally but little subsequent suffering."

He adds, "Were I asked under what pathological conditions I would recommend this operation, my reply would be, in all cases where any other surgical or mechanical means would be considered advisable, which, of course, must be left to the judgment of the surgeon in charge. I should not interfere, however, in any case where there was acute inflammation of any part of the organ."—*New York Medical Journ.*, Oct. 1873.

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The general plan of the work may be gathered from the subjoined

CONDENSED SUMMARY OF CONTENTS.

PART I. PRELIMINARY (pp. 17—62). CHAPTER I. On the Furniture necessary to the Shop or Dispensing Office. II. Store-room, Cellar, and Laboratory.

PART II. (pp. 63—108). CHAPTER I. On Pharmacopœias. II. Weights, Measures, and Specific Gravity. III. Temperature. IV. Modes of Measuring, Regulating, and Applying Heat.

PART III. INORGANIC PHARMACEUTICAL CHEMISTRY (pp. 109—318). CHAPTER I. Chemical Processes used in Pharmacy. II. Non-metallic Elements and their Medicinal Preparations. III. On the Inorganic Acids. IV. The Alkalies and their Salts. V. The Earths and their Preparations. VI. Iron and Manganese. VII. Preparations of Copper, Zinc, Nickel, and Cadmium. VIII. Lead, Silver, and Bismuth. IX. Antimony and Arsenic. X. Mercury, Gold, and Platinum. XI. Of Tests, Qualitative and Quantitative.

PART IV. PHARMACY IN ITS RELATIONS TO ORGANIC CHEMISTRY (pp. 319—536). CHAPTER I. Ligneous Fibre and its Derivatives. II. Farinaceous, Mucilaginous, and Saccharine Principles. III. Albuminous and Similar Principles and certain Animal Products. IV. Fermentation, Alcohols and Ethers. V. Fixed Oils and Fats. VI. Volatile Oils, Camphors, and Resins. VII. Organic Acids. VIII. Organic Alkalies or Alkaloids. IX. Neutral Organic Principles.

PART V. PHARMACY PROPER (GALENICAL PHARMACY) (pp. 537—778). CHAPTER I. On the different parts of Plants, their Collection and Desiccation. II. The Powdering of Drugs, and Powders. III. Solution and Filtration. IV. Medicated Waters. V. Maceration and Infusion. VI. Percolation, or the Displacement Process. VII. Tinctures. VIII. Medicated Wines, Vinegars, Elixirs, and Cordials. IX. Preparations of Opium. X. Evaporation and the Extracts. XI. Fluid Extracts and the Oleoresins. XII. Syrups and Honeys. XIII. Conserves, Confections, Electuaries, Pastes, Lozenges, and Candies. XIV. Extracta Resina and Concentrated Remedies. XV. Distillation, Distilled Products, and Perfumery.

PART VI. EXTEMPORANEOUS PHARMACY (pp. 779—930). CHAPTER I. On Prescriptions. II. The Art of Selecting and Combining Medicines. III. On Powders, Pills, Suppositories, etc. IV. Liquid Preparations, Solutions, Mixtures, etc. V. Styptic and Depilatory Powders, Lotions, Collyria, Injections, Enemas, Gargles, Baths, Inhalations, and Fumigations. VI. Cerates, Ointments, and Liniments. VII. Plasters, Plasmata, and Cataplasms. VIII. On Dispensing and Compounding Prescriptions.

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Acids	505	Ointments	52
Extracts	187	Pills	146
Ferrum	101	Powders	79
Fluid Extract	133	Solutions	109
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